



Department of Defense Legacy Resource Management Program

PROJECT NUMBER 08-391

A Study of Insect Pollinators Associated with DoD TER-S Flowering Plants, Including Identification of Habitat Types Where They Co-Occur by Military Installation in the Western United States

Stephen Buchmann, Ph.D.

Laurie Davies Adams

Anna D. Howell

Milagra Weiss

April 2010

Report Documentation Page			Form Approved OMB No. 0704-0188	
<p>Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.</p>				
1. REPORT DATE APR 2010	2. REPORT TYPE	3. DATES COVERED 00-00-2010 to 00-00-2010		
A Study of Insect Pollinators Associated with DoD TER-S Flowering Plants, Including Identification of Habitat Types Where They Co-Occur by Military Installation in the Western United States			5a. CONTRACT NUMBER	
			5b. GRANT NUMBER	
			5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)			5d. PROJECT NUMBER	
			5e. TASK NUMBER	
			5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Ofc Deputy UnderSecretary of Defense for Installations & Environment,Department of Defense Legacy Resource Management Program,3400 Defense Pentagon,Washington,DC,20301-3400			8. PERFORMING ORGANIZATION REPORT NUMBER	
			10. SPONSOR/MONITOR'S ACRONYM(S)	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)			11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
			12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited	
13. SUPPLEMENTARY NOTES				
14. ABSTRACT				
15. SUBJECT TERMS				
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 67
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified	19a. NAME OF RESPONSIBLE PERSON	

Table of Contents

Executive Summary	3
Background.....	4
Research Methods.....	4
Results.....	6
Conclusions.....	8
Acknowledgements.....	9
Bibliography	10

Executive Summary

Within the past 5 to 10 years, pollinating animals and rare plants have become the focus of new programs and priorities by the Department of Defense (DoD) along with other federal land management and research agencies and Non-Government Organization (NGO) conservation and restoration organizations. Laurie Davies Adams, Executive Director of the Pollinator Partnership and Stephen Buchmann, Ph.D., North American Pollinator Protection Campaign (NAPPC) Interim Coordinator for the Pollinator Partnership, were invited to present a poster paper on the importance of pollinators to Threatened, Endangered, Rare and At Risk Species (TER-S), and all flowering plants, at the annual meeting of the National Military Fish and Wildlife Association (NMFWA) meetings held in Phoenix, AZ in 2008. As a result of discussions initiated at that meeting, a DoD need was identified and the Legacy project was proposed to address it.

This Phase 1 Legacy project created an integrated Excel spreadsheet database of pollinator-plant associations (floral visitors and true pollinators) for DoD threatened, endangered, and at-risk flowering plants (angiosperms) and insect pollinators. This project focused on determining the floral visitors for several hundred species of at-risk flowering plants (angiosperms) found on DoD installations in southern California, Arizona, Nevada and New Mexico. Previous to this project, information had not been available, nor been synthesized by DoD personnel, USFWS, universities or private environmental contractors. The only previous study of its kind was a pollinator-related field monitoring and restoration project that was funded by Legacy in 2001 and focused on pollinators in the prairie at a site in the West. This project builds upon that concept and expanded the benefits to other military installations for pollinator specific natural resource information. We expect that DoD environmental stewardship personnel, along with other environmental scientists and DoD civilian contractors, will be able to use our database as a springboard to help conduct their own on-the-ground observational studies of pollinators visiting TER-S flowering plants at specific western DoD installations and to use the database as a source for restoration and maintenance plans.

Our findings include the discovery that no previous observational field or experimental antheiological studies of native pollinating animals; especially bees, flower flies, wasps, beetles and butterflies, have been conducted of threatened, endangered, rare and at-risk species of flowering plants (angiosperms) on any of the approximately 100 DoD installations found in the five western states we literature surveyed. In all, the project conducted extensive literature (library and online) searches for insect and vertebrate visitors to all known TER-S (226 species) found on DoD lands in the western United States. The present study and associated Appendix database, although a literature review of primary scientific journals, some gray literature, and a few interviews with pollination ecologists who are presently or, who have previously worked in these states, lays the groundwork for future on-the-ground studies by DoD personnel (e.g. Environmental Stewardship divisions), or environmental contractors. These include university and NGO scientists hired to work on DoD lands, or participating in collaborative research programs, censuses, plant and animal monitoring. Using the expanded statewide search criteria, we were able to find existing published pollinator observational records for nearly all of the targeted TER-S plants. We were unable to find any information for 18 plant species. For these, we did assign broad category (e.g. bee, beetle, fly, hummingbird, and bat) likely pollinator visitors based on the established pollination syndrome morphological associations and floral rewards technique often used by floral biologists.

Background

The 2003 General Accounting Office (GAO) Report recommended and the resulting Action Plan signed by DoD, DOI, and USDA committed these three agencies to work together in areas of science, management, and natural resource training. This project will allow and promote more informed natural resource management that includes pollinators and their flowering host plants. In June of 2007, The Department of Defense signed a Memorandum of Understanding with the Pollinator Partnership (then called Coevolution Institute, or CoE), the 501(c)3 parent organization of NAPPC (www.nappc.org and www.pollinator.org) facilitating a framework for cooperative programs that promote conservation and management of pollinators, their habitat, and associated ecosystems.

The bee fauna of North America is extremely diverse, consisting of almost 7,000 species. The United States alone has 4,000 species of native solitary and social bees. These diverse taxa live underground, in twigs and dead wood, and in various cavities. When all bee species are combined along with other pollinating insects such as flies, beetles, wasps, butterflies and moths, and examined in relation to the scattered populations of rare, threatened and endangered flowering plants, it is a formidable task to document and “connect the dots” between the plants and their known or suspected pollinators.. We did just that for a subset of TER-S listed plants.

This Department of Defense Legacy Resource Management Program FY 2008 contract was awarded to the Pollinator Partnership (P2), under the direction of its Executive Director, Laurie Davies Adams, and lead researcher on the project, Dr. Stephen Buchmann. Cooperative agreement W912DY-08-2-0008 was awarded to P2 specifically for the discovery of pollinator plant associations from an online database and literature search of 226 TER-S plants known to occur on DoD installations in 5 western states: Arizona, Southern California, New Mexico, Nevada, and Texas.

Our P2 Legacy workgroup was guided and advised by Mr. Lewis E. Gorman of the U.S. Fish and Wildlife Service. Dr. Buchmann supervised two University of Arizona graduate student researchers, Anna Howell and Milagra Weiss, who were responsible for online and library bibliographic and database research and literature searches.

Research Methods

At the start of our investigation, we created a list of the TER-S rare plants known to occur on DoD facilities in the West, with the help and advice of Mr. Lewis Gorman. From this list we then began our work to determine the plant-pollinator relationships. It is important to note that no observational, collection, or trapping methods were used to monitor floral visitors and potential pollinators at target plant species in the field in our research area. Instead, the study focused on published and unpublished records of insect visitors to TER-S plant species accessible in online databases, primary literature (journals), library resources, and from interviews and consultation with entomologist and botanical experts. Further, since original or summarized published observations of pollinating animal visitations does not exist for our numerous target TER-S flowering plant species, we broadened our search areas. Therefore, we looked for published

pollinator observations on TER-S plants within the nearly five state areas of installations. For a very few plants, not even this data was available. Thus, in a handful of cases we assigned a broad pollinator class (e.g. bee, fly, wasp, butterfly, moth, beetle, bird, and bat) based on examination of quality macro photographs of flowers, or examining pressed herbarium voucher specimens. This pollinator assignment is possible because “pollination syndromes” exist whereby floral morphology, shape, colors and records of scents are all clues that lead to accurate predictions, of at minimum, insect orders and types of pollinating animals likely to visit a given flower. This method of pollinator identification does not, however, replace collecting field data, which might be considered in an expanded-scope project in the future.

Although we originally considered California military installations only found in southern California, the TER-S plant species came from military installations in both southern and central California. For this reason, we have included all military installations occurring in California on our map. In all cases, for the western states we surveyed the existing pollination literature and published pollinator visitation data from locations outside of the actual installations. We expanded our search criteria to include any and all sites where the plants grew within their respective states. This is because no data existed from observations actually made on these facilities. Therefore, we believe that environmental stewardship divisions and contractors serving installations in all of California may derive a benefit from our findings. Thus, we have presented a full map of California, not just southern California. Please see the attached 2 maps of pollinators of TER-S Plants in Western State – Map of Installations.

Our investigative team chose an integrative and interdisciplinary approach to finding and documenting disparate pollinator and floral visitation records of TER-S plants noted in a widely scattered scientific literature (primary print and electronic journals), electronic databases, industry and trade gray literature periodicals, and various unpublished sources. Whenever appropriate, we also sought advice and unpublished data from interviews with field researchers who have conducted field pollination and floral biology research on TER-S angiosperm species in the western United States.

We were fortunate in having access to a monumental unpublished study of California native plants and their pollinators (by A.R. Moldenke), and a recently digitized electronic version of the encyclopedic reference volumes *Catalog of Hymenoptera in America North of Mexico* by Krombein, Hurd, Smith and Burks (Smithsonian Institution Press, 1979). All of our findings were documented in an elaborate Excel spreadsheet (attached).

To search for pollinators of specific flowering plants, species first required plant scientific name identification verification using either the USDA “PLANTS” website (<http://plants.usda.gov>), or the Integrated Taxonomic Information System (ITIS) website (<http://www.itis.gov>). Both sites list the common names, scientific names, as well as any known taxonomic synonyms. We found this to be a critical step in searching since the exact Genus species/spelling information allows you to broaden searches and be confident of the name of the species tracked across and through scientific publications and bibliographies. Once all names (scientific, common, and synonyms) were known and confirmed, online searches were performed beginning with the plant name listed on the spreadsheet (Appendix).

Google’s search engine (<http://google.com>) was used to gather initial information on pollinators for each TER-S plant. We also searched for scientific publications (bibliographic citations) using the beta version of Google Scholar. If no records were found using the species name listed, we would then use synonyms, then common names, and lastly the plant genus. Most records, even those found in peer-reviewed scientific journals could be found using Google.

If a record was found in a peer-reviewed journal, the next step involved using the website “Web of Science” (<http://apps.isiknowledge.com/WOS>) to download the article and scan through it to find the information. The most valuable records were found in peer-reviewed articles, the primary scientific literature found in print and online biological journals; therefore, Web of Science was considered one of our most useful search engines.

The search engine Google Scholar (<http://scholar.google.com>) was used if no records were found using Google or Web of Science. Google Scholar allowed a broader search of peer review records such as articles in small journals. The last search engine used was Google “Images” (<http://images.google.com>). A search of all photos pertaining to the plant listed would be produced. Some images would show a pollinator on the plant and that record would be used. We also searched for images using the USDA Plant database and archives. Google, Google Scholar, Google Image and Web of Science were the main search engines used during the duration of the project. Additional online websites or databases were used during the literature review and are listed at the end of this section.

If no online resources or records were located, a note was made on the spreadsheet indicating all online resources have been exhausted and unsuccessful. Additional searching in ‘gray’ literature, written material that is generally not published commercially or is not generally accessible, as used for those records yielding no results. This search consisted of e-mailing individuals in the field of pollination biology for any information regarding any of our plant species or genera, both published and non-published data was accepted.

When pollinator records for a specific plant species were found the author’s name, publication year, and a brief description of the type and quality of the data gathered, was recorded in the spreadsheet.

Websites and databases most commonly used:

- USDA “PLANTS” website (<http://plants.usda.gov>)
- Integrated Taxonomic Information System (ITIS) website (<http://www.itis.gov>)
- Google’s search engine (<http://google.com>)
- “Web of Science” (<http://apps.isiknowledge.com/WOS>)
- Google Scholar (<http://scholar.google.com>)
- Google “Images” (<http://images.google.com>)

Additionally websites and databases used:

- Arizona Game and Fish Department Heritage Data Management System (<http://www.azgfd.gov>)
- Center for Plant Conservation (<http://www.centerforplantconservation.org>)
- National Center for Ecological Analysis and Synthesis Interaction Web (<http://www.nceas.ucsb.edu/interactionweb>).
- The Pherobase: Database of Pheromones and semiochemicals (<http://pherobase.com/>)
- Zipcode Zoo (<http://zipcodezoo.com>)

Results

Pollination ecology is a relatively young science and field observations on floral visitors, followed by their confirmation as pollinators are lacking for most of the more than 250,000

flowering plants (angiosperms) worldwide. This is true even for some of the most familiar crop species. As a result, and as expected, pollinator records for a majority of the plant *species* listed could not be found; therefore, many of the records found describe pollinators for plants of the same *genera* as those found in our master list, but not for that particular species. Nonetheless, this is an extraordinary record and a major accomplishment in bringing practical plant-pollinator relationship data to light for use by researchers, land managers, restoration ecologists, and more.

Our findings from online records, published and unpublished literature, and interviews of subject matter experts for our TER-S flowering plant species found on DoD installations in 5 western states are presented in an extensive and comprehensive spreadsheet (Appendix 2) and in the annotated table (Appendix 2). We were able to document pollinators for the 226 known TER-S threatened, endangered and rare angiosperm species found on military installations in Arizona, California, New Mexico, Nevada, and Texas. We were unable to document the pollinators for 18 plant species:

- *Apacheria chiricahuensis* (White Sands Missile Range, NM, Vandenberg Air Force Base, CA, San Clemente Island Naval Reservation, CA, San Nicolas Island Naval Reservation, CA),
- *Aphanisma blitoides* (Vandenberg Air Force Base, CA San Clemente Island Naval Reservation, San Nicolas Island Naval Reservation, CA),
- *Chloris texensis* (Ellington Field, TX),
- *Gambelia speciosa* (San Clemente Island Naval Reservation, CA),
- *Glossopetalon pungens* var. *glabrum* (Nellis Air Force Base, NV),
- *Hexalectris warnockii* (Fort Huachuca, AZ),
- *Lavatera assurgentiflora* ssp. *assurgentiflora* (San Nicolas Island Naval Reservation, CA),
- *Lavatera assurgentiflora* spp. *glabra* (San Clemente Island Naval Reservation, CA),
- *Legenere limosa* (Mather Air Force Base, CA-closed),
- *Loeflingia squarrosa* ssp. *artemisiarum* (Edwards Air Force Base, CA, Sierra Army Depot, CA),
- *Nesaea longipes* (Laughlin Air Force Base, TX),
- *Oryctes nevadensis* (Hawthorne Army Ammunition Depot, NV),
- *Perityle staurophylla* var. *homoflora* (White Sands Missile Range, NM),
- *Porophyllum pygmaeum* (Nellis Air Force Base, NV),
- *Salvia greatae* (Chocolate Mountain Naval Aerial Gunnery Range, CA),
- *Stylocline citroleum* (Naval Petroleum Reserve Number One, CA),
- *Thurovia triflora* (TS Barker Dam DZ, TX), and
- *Vauquelinia californica* ssp. *sonorensis* (Barry M. Goldwater Air Force Range, AZ).

For these few remaining species, we indicated the most likely pollinator in broad taxonomic categories (bee, fly, beetle, wasp, butterfly, and moth) in the species column for those plants. Very little primary or gray literature published information on pollinators of native plants, especially rare or threatened species exists. Data on insect pollinators provided in Appendix and the associated spreadsheet are the only information available on the insect visitors to these southwestern TER-S plants.

It is rare for any flowering plant species to have just one pollinating animal association. Most angiosperms have a small guild of 6 to 12 or more insect species as floral visitors and pollinators. This redundancy ensures that if one pollinator declines or fails to visit its host plant, which some level of fruit and seed set occurs. This is exactly what we found, small guilds of a dozen or more pollinators associated with most of the species. This pollinator guild redundancy (i.e. that often 5

or more pollinating insects can equally pollinate a single flowering plant species) was accounted for and is reflected in our Excel spreadsheet of pollinators and TER-S plants.

Conclusions and Long-Term Benefits to Military

This project provides a vast amount of new biological and pollination ecology information for military natural resource managers to employ when managing their natural resources in accordance with their Integrated Natural Resource Management Plan (INRMP) as per the Sikes Act.

The project will help DoD advance pollinator-related natural resource management, conservation and restoration issues, along with promoting the tenets of the already established DoD-COE Pollinator MOU signed June 26, 2007.

This natural resource information will assist military installations in their partnership activities. Private landowners outside the fence line will be provided with new natural resource management information promoting the extension of benefits of wise natural resource management for pollinators occurring on military installations to adjacent non DoD lands. This adds value to installation natural resource management efforts by encouraging private landowners to employ conservation practices that are friendly to TER-S pollinators and TER-S plants of natural resource interest to the military.

This information has been collected and synthesized for the first time in any format. An Excel spreadsheet (two versions: one organized by plant species and the other by state) was created for these data sets. This information is easily searchable and can be queried by DoD land managers, environmental stewardship divisions, contractors, NGO's and other partners. Our comprehensive listing of floral visitors to TER-S plants provides the first printed and searchable database for these animal visitors and plants. Although there is no information (collections or observations with voucher museum specimens) for these threatened plants on any military installations, the plants will have the same species, or insect genera as visitors. Our information came from sites (reports made) within the same state.

Now that insect pollinators (scientific names and some common names) have been associated with these flowering plant species, land managers can better plan, conserve, protect and restore lands under their stewardship mandates and control. Pollination systems, plants, and their associated pollinators cannot be viewed in isolation or singly. Protecting a threatened, endangered or rare flowering plant does not guarantee its survival as viable, reproductively stable, genetically diverse and stable populations. Protecting plants alone does not ensure protection of mutualist pollinators. Often, pollinating insects do not nest or gather nesting materials from exactly the same spots or habitats where TER-S plants live. Further, pollinators themselves may be naturally rare and not frequently encountered even during extensive and expensive multi-year survey research programs. Land management plans should contain provisions to protect and conserve both plants and their pollinators, including by providing host and larval plants for pollinators compatible to the ER plants..

Neighboring lands (private, Bureau of Land Management, State lands, parks or refuges) likely contain some populations of the same TER-S plants and their floral visitors. Therefore,

environmental stewardship division chiefs can interact with contractors and partner land managers and biologists with plant and pollinator information in hand.

These plant/insect associations can form the basis of more extensive actual field studies to associate plants with insect pollinators, or more in-depth studies (i.e. Pollen and nectar diet breadth of bees or minimum and maximum flight distances for native bees). This information can be used to further refine habitat management plans and restoration/reintroduction efforts on degraded lands. DoD biologists will be able to make use of this first plant/pollinator relational database to plan further studies and safeguard existing TER-S plant populations under their jurisdiction and care.

Land management plans often neglect any consideration of animal pollinators. This study, now being repeated for TER-S plants in the southeastern United States with funding from the DoD Legacy Program, will allow DoD personnel and their partners to plan wisely and cost-effectively for military and recreational uses (e.g. hunting, driving, hiking) of their diverse lands, habitats, and landscapes. It should help set a precedent that in order to preserve and protect native plants, it is crucially important to consider and implement habitat plans that include their pollinators, along with other materials needed by these animals (nesting habitat, water, leaves, resins etc.) in order to maintain healthy viable populations.

Acknowledgements

We thank the Department of Defense Legacy Resource Management Program for their support of pollinators! We would especially like to thank Mr. L. Peter Boice, Deputy Director of Natural Resources in the Office of the Deputy Under Secretary of Defense and his Arlington office Legacy Resource Management Program staff (especially Natural Resource Management Specialists Jane Mallory and Pedro Morales) for assisting us during all phases of this important pollinator/plant literature research and database creation. We thank WSMR Environmental Stewardship Division Chief Mr. Junior Kerns, and Wildlife Biologist Trish Griffin, for their prescient vision, and early support of pollinator surveys at the Yuma Proving Grounds and White Sands Missile Range. We thank Dr. Michael Ruggiero (formerly of the Smithsonian Institution and ITIS, Integrated Taxonomic Information Service) for making the monumental Krombein “Hymenoptera Catalog of North America” available to us and the public. Similarly, we thank Dr. Andrew Moldenke of Oregon State University for access to his exhaustive early studies of the bee pollinators of California plants.

Bibliography

The following references are primary scientific journal articles used to find information on floral visitors and pollinators of our 226 species in 5 western states.

Arizona Game and Fish Department. 2004 (*Talinum marginatum* Greene).
Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. 6 pp.
http://www.azgfd.gov/w_c/edits/documents/Talimarg.d.pdf. Accessed: 8 June 2008.

Keywords: *Talinum marginatum*, Bombyliidae
Draft abstract for the AZ game and fish department reports observation of beefly (Family: Bombyliidae) flower visitation.

Arizona Game and Fish Department. 2004 (*Puccinellia parishii*).
Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. 6 pp.
http://www.azgfd.gov/w_c/edits/documents/Puccpari.d_001.pdf Accessed: 9 July 2008

Keywords: *Puccinellia parishii*, Parish's alkali grass, wind pollination
Draft abstract for the AZ game and fish department reports that this grass is pollinated by wind or water.

Bauer, P.G. 1983. Pollination relationships on the Beartooth Plateau tundra of Southern Montana. American Journal of Botany 70 (1): 134 – 144.

Keywords: *Trifolium spp.*, *Bombus spp.*
Direct observation, collection and identification of bumblebee pollinators on plant community that included *Trifolium dasycyphllum*. Analysis of pollen loads on various *Bombus spp.* showed that *B. kirbyellus* and *B. sylvicola* carried “proper” *Trifolium* pollen.

Campbell, L.G. and B.C. Husband. 2007. Small populations are mate-poor but pollinator-rich in a rare, self-incompatible plant, *Hymenoxys herbacea*. New Phytologist 174: 915 – 925.

Keywords: *Hymenoxys spp.*, Hymenoptera, Diptera, Lepidoptera, Neuroptera, Homoptera, Hemiptera, Coleoptera, Orthoptera
Direct observation and collection of insects on *H. herbacea*, all insect visits were included as pollinators.

Center for Plant Conservation (*Pogogyne clareana*). 2005. National Collection Plant Profile.
http://www.centerforplantconservation.org/ASP/CPC_ViewProfile.asp?CPCNum=3552.

Accessed: 13 July 2008.

Keywords: *Pogogyne clareana*, Santa Lucia pogogyne, bumble bee, sweat bee
Reports personal observation by Dieter Wilken of flower visitation by small bumble bees and sweat bees.

Center for Plant Conservation (*Phacelia argentea*). 2008. National Collection Plant Profile.
http://www.centerforplantconservation.org/ASP/CPC_ViewProfile.asp?CPCNum=3339.

Accessed 13 July 2008

Keywords: *Phacelia sp.*, *Anthidium palliventre*, *Bombus sp.*, *Apis mellifera*, leafcutter bee, bumble bee, honey bee

Summarizes pollinator observations by B. Rittenhouse (Bull. Of the Native Plant Society of Oregon. 26, 10) on *Phacelia argentea*. Rittenhouse observed *Anthidium palliventre*, *Bombus sp.* and *Apis mellifera*.

Cronk, JK and M.S. Fennessy. 2001. Wetland Plants: Biology and Ecology. CRC Press. 462 pp.

Keywords: *Carex sp.*, wind pollination

Describes morphology of sedges. The floral structure of sedges is suited to wind pollination.

DeBruin, E.A. 1995. Surveys and habitat analyses of five rare plant species in the Organ mountains of New Mexico. In: Southwestern rare and endangered plants: Proceedings of the second conference, Flagstaff, AZ (eds. Maschinski, J., H.D. Hammond, L. Holter). U.S. Dept. of Ag., Forest Service, Rocky Mountain Forest and Range Experiment Station. pp. 307-315.

Keywords: *Draba standleyi*

Cites unpublished observation of fly pollination on *Draba standleyi* in one location in AZ by Malusa et. al. (Malusa, J., D.F. Gori, P.L. Warren, E.S. Monarque. 1992.

Population studies of sensitive plants of the Coronado National Forest, AZ. Unpublished report of work performed under cost-share agreement between The Nature Conservancy and the Coronado National Forest).

Dieringer, G. 1991. Pollination ecology of *Streptanthus bracteatus* (Brassicaceae): A rare central Texas endemic. The Southwestern Naturalist 36 (3): 341-343.

Keywords: *Streptanthus bracteatus*, *Megachile comata*, *Dialictus*, *Bombyliidae*, *Syrphidae*.

Direct observation of floral visitation and pollination behavior. Author reports that *Megachile comata* provides most effective pollination, while the Halictid, Bombyliid and Syrphid species are too small to provide effective pollination.

Grant, V and P.D. Hurd. 1979. Pollination of Southwestern Opuntias. Plant Systematics and Evolution 133: 15-28.

Keywords: *Opuntia sp.* *Agapostemon angelicus* Cockerell, *Agapostemon texanus californicus*, *Andrena enceliae* Cockerell, *Ashmeadiella opuntiae* Cockerell, *Dialictus incompletus* Crawford, *Exomalopsis nitens* Cockerell, *Lithurge apicalis* Cresson, *Melissodes tessellata* Laberge

Literature review of pollination of *Opuntia* cactus. Review divided into separate sections naming pollinators of prickly pear types, cholla types and club-chollas respectively. Note that pollinators are listed in the review for *O. parryi* which is a synonym of *O. californica*.

Emerson, S. 1939. A preliminary survey of the *Oenothera organensis* population. Genetics 24: 524-537.

Keywords: *Oenothera organensis*

A "strong-flying, nocturnal insect, such as a sphinx moth" is presumed to be a pollinator of *Oenothera organensis*. Flowers are open and receptive from dusk until "a few hours after sunrise". However, on *O. organensis* planted at the Pasadena botanical gardens, no pollination by sphinx moths that visit other *Oenothera* sp. at the gardens.

Greene, S. and A. Bell. 2007. Alternatives to honeybees for pollinating clover (*Trifolium* L.) germplasm accessions. USDA-ARS technical abstract.

http://www.ars.usda.gov/research/publications/publications.htm?SEQ_NO_115=221332.

Accessed: 1 June 2008.

Keywords: *Trifolium spp.*, *Apis mellifera*, *Bombus occidentalis*, *Megachile rotundata*.

Technical abstract reported that *Apis mellifera* and *Megachile rotundata* provided effective pollination of *Trifolium L.*

Griswold, T., G. Frankie, and H. Ikerd. 2005. The Bees (Hymenoptera: Apoidea) of Mount Wanda, John Muir National Historic Site: A Preliminary Assessment. As cited in: Ladyman, J.A.R. (2007, January 29). *Triteleia grandiflora* Lindley (largeflower triteleia): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/triteleiagrandiflora.pdf> [Accessed: 25 May 2008].

Keywords: *Triteleia spp.*

Forest Service report cites observations by Griswold *et al* of pollinators of *T. laxa*.

Jones, C.E. 1995. Pollination biology in California deserts. In: Latting, J. and Rowlands, P.G. (eds) The California desert: An introduction to natural resources and man's impact. Riverside, CA: June Latting Books. 665 pp.

Keywords: *Salvia gregatae*, Orocopia sage, Lavender sage, Hymenoptera

Author reports bee pollination per personal communication by Diana Cosand.

Lange, R.S., P.E. Scott. 1999. Hummingbird and bee pollination of *Penstemon pseudospectabilis*. Journal of the Torrey Botanical Society 126 (2): 99-106.

Keywords: *Penstemon ramosus*

In the context of the *P. pseudospectabilis* system and flower color, author states personal observation of non-specific hummingbird pollination of red flowered *P. ramosus* in the Chiricahua Mountains.

Levin, R.A., R.A. Raguso, and L.A. McDade. 2001. Fragrance chemistry and pollinator affinities in Nyctaginaceae. Phytochemistry 58 (3): 429-440.

Keywords: *Acleisanthes*; *Mirabilis*; *Selinocarpus*; Nyctaginaceae; Four o'clock; Floral fragrance; Pollination; Hawkmoths.

The authors collected floral fragrances from the headspace of 20 species of flowers in 3 genera of Nyctaginaceae: *Acleisanthes*, *Mirabilis* and *Selinocarpus*. Pollinator observations were mainly done by R. Levin. Levin also captured the moths as they visited flowers. He collected and analyzed pollen samples found on each moth and also looked for scales on the stigmas of the flowers the moths had visited.

Moldenke, A. R. 1971. Studies of the Species Diversity of California Plant Communities. PH.D. Dissertation, Stanford University

The author collected pollinators on various plant species along 10 communities/transects across Central California. All pollinators caught were identified to species as well as the flowers they were visiting. Pollinators were caught with a net.

Nixon, K.C. 2002. The Oak (*Quercus*) biodiversity of California and adjacent regions. USDA Forest Service Gen. Tech. Rep. PSW-GTR-184.

http://www.fs.fed.us/psw/publications/documents/gtr-184/001_Nixon.pdf. Accessed: 9 July 2008.

Keywords: *Quercus dumosa*, California scrub oak, wind pollination.

Technical report on California oaks reports that all member of the *Quercus* genus are wind pollinated.

O'Brien, M.H. 1980. The pollination biology of a pavement plain: Pollinator visitation patterns. *Oecologia* 47: 213 – 218.

Keywords: *Erigeron spp.*, *Draba spp.*, Halictidae, Hymenoptera, Lepidoptera, Diptera, Thysanoptera, Syrphidae

Reports on direct observation of occasional and frequent pollinators of several plants including *Erigeron aphanactis* and *Draba douglasii*. Notes that *E. aphanactis* receives only occasional pollinators of any groups and therefore relies on a range of pollinators from Halictidae, Hymenoptera, Lepidoptera, Diptera, and Thysanoptera. Distinguishes the Halictid pollinator of *E. aphanactis* as belonging to the genus, *Dialictus*. Reports on syrphid fly pollination of *D. douglasii*.

Parrish, J.A.D and F.A. Bazzaz. 1979. Difference in pollination niche relationships in early and late successional plant communities. *Ecology* 60(3): 597 – 610.

Keywords: *Erigeron spp.*, Cantheridae, Syrphidae, Anthophoridae, Vespidae.

Reports on direct observation of pollinators on *E. Canadensis* and *E. annuus*.

Raguso, R.A., C. Henzel, S.L. Buchmann, G.P. Nabhan. 2003. Trumpet flowers of the Sonoran Desert: floral biology of *Peniocereus* cacti and Sacred *Datura*. *International Journal of Plant Science* 164(6): 877-892.

Keywords: *Peniocereus greggii*, *Apis mellifera*, *Manduca sexta*, honey bee, sphinx moth

This paper recorded floral visit observations in Southern Arizona and Northern Mexico of *P. greggii* var. *transmontanus*. Active observation of honey bee visits, single observation of sphinx moth visitation, observation of pollen deposition and wing scales on flower.

Robertson, C. 1929. Flowers and insects: lists of visitors to four hundred and fifty-three flowers. Carlinville, IL, USA, C. Robertson. National Center for Ecological Analysis and Synthesis Interaction Web Database: http://www.nceas.ucsb.edu/interactionweb/html/robertson_1929.html. Accessed June 2008.

Keywords:

Lists plant-pollinator interactions for 456 plant species in Illinois obtained by direct observation.

Smith, F.J. 2002. Current Knowledge and Conservation Status of *Astragalus oophorus* var. *clokeyanus* Barneby (Fabaceae), the Clokey eggvetch. Status Report for Nevada Natural Heritage Program, Department of Conservation and Natural Resources and U. S. Fish and Wildlife Service, Nevada State Office.

Keywords: *Astragalus oophorus*, Lepidoptera

Summarizes the current status of *Astragalus oophorus* var. *clokeyanus* Barneby (Fabaceae), including history, ecology, and where it is currently found. Pollinator observation: Picture of an unknown/unidentified butterfly visiting the flower.

Virginia Tech. 1998. Endangered Species Information System.
<http://fwie.fw.vt.edu/WWW/esis/index.htm> accessed May 2008.

Keywords: *Escobaria spp.*, Halictidae

This is a database that provided preliminary research for the US Fish and Wildlife Endangered Species list. There is no clear author for the individual records. There is a report of personal communication of observation of Halictid bees pollinating *Escobaria sneedii*. (Reported under syn. *Coryphantha spp.*), by S. Brack of Mesa Gardens, Belen, NM in 1985.

Appendix to DoD TER-S Pollinator Project (Legacy 08-[391]):
 List of TER-S angiosperms, state where populations are found, and a list of
 corresponding pollinators.

Plant Scientific Name, (State), and (Common Name)	Pollinators Scientific or Common Names	Installation(s) in which Plant Species Occur	Conservation Status (Global GRANK; State SRANK)
<i>Acleisanthes crassifolia</i> (TX) (Texas trumpets)	Hawkmoth	Laughlin Air Force Base	G2; S2
<i>Agave shawii</i> (CA) (Shaw's agave)	Bee	San Diego Naval Training Center (Closed)	G2G3; S1.2
<i>Allium elmendorfii</i> (TX) (Elmendorf's onion)	Ashmeadiella cactorum cactorum Bombus Bombus bifarius nearcticus Bombus centralis Bombus flavifrons dimidiatus Bombus nearcticus Bombus sylvicola Bombylius major Calliphora terraenovae Chlosyne damoetas Dialictus microlepidoides Eristalis hirtus Evylaeus sp 8 Hummingbird calliope Hylaeus coloradensis Hylemya emarginalis Hylemya laxifrons Hylemya pseudospinidens Lasiops medius Leptopsilopa varipes Plebejus saepolus Polites sabuleti tecumseh Psithyrus crawfordi Psithyrus fernaldae Tenthredo subnigriceps Toxomerus marginatus	Corpus Christi Naval Air Station	G2; S2
<i>Allium hickmanii</i> (CA) (Hickman's onion)	Ashmeadiella cactorum cactorum Bombus sp Bombus bifarius nearcticus Bombus centralis Bombus flavifrons dimidiatus Bombus nearcticus Bombus sylvicola Bombylius major Calliphora terraenovae Chlosyne damoetas Dialictus microlepidoides Eristalis hirtus Evylaeus sp 8 Hummingbird calliope Hylaeus coloradensis Hylemya emarginalis Hylemya laxifrons Hylemya pseudospinidens Lasiops medius Leptopsilopa varipes	Fort Ord Military Reservation (Closed)	G2; S2.2

	Plebejus saepeolus Polites sabuleti tecumseh Psithyrus crawfordi Psithyrus fernaldae Tenthredo subnigriceps Toxomerus marginatus		
Allium tuolumnense (CA) (Rawhide Hill onion)	Ashmeadiella cactorum cactorum Bombus Bombus bifarius nearcticus Bombus centralis Bombus flavifrons dimidiatus Bombus nearcticus Bombus sylvicola Bombylius major Calliphora terraenovae Chlosyne damoetas Dialictus microlepoides Eristalis hirtus Evylaeus sp 8 Hummingbird calliope Hylaeus coloradensis Hylemya emarginalis Hylemya laxifrons Hylemya pseudospinidens Lasiops medius Leptopsilopa varipes Plebejus saepeolus Polites sabuleti tecumseh Psithyrus crawfordi Psithyrus fernaldae Tenthredo subnigriceps Toxomerus marginatus	T S Oakdale	G2; S2.2
Apacheria chiricahuensis (NM) (Apache bush or cliff brittlebush)	Bee	White Sands Missile Range*	G2; S2
Aphanisma blitoides (CA) (San Diego coastal creeper)	Wind-pollinated, not insect	Vandenberg Air Force Base	G2; S1.1
Arabis bodiensis (NV) (Bodie Hills rockcress)	Agapostemon radiatus Allograpta obliqua Andrena arabis Andrena carlini Andrena geranii Andrena nasonii Andrena nasonii Anthomyiella pluvialis Apis mellifera Augochlora viridula Bombias separatus Bombus impatiens Bombylius major Ceratina dupla Ceratina dupla Chloralictus caeruleus Chloralictus obscurus Chloralictus sparsus Chloralictus tegularis Chloralictus versatus Chloralictus zephyrus Curtisapis coriacea Empis humilis	Hawthorne Army Ammunition Depot	G2; S2

	<i>Empis nuda</i> <i>Lasioglossum macoupinense</i> <i>Evylaeus foxii</i> <i>Evylaeus pectoralis</i> <i>Gnathias cuneatus</i> <i>Gnathias ovatus</i> <i>Gnathias xanthoparius</i> <i>Halictus lerouxii</i> <i>Leionotus foraminatus</i> <i>Mesogramma geminata</i> <i>Opandrena cressonii</i> <i>Opandrena miserabilis</i> <i>Opandrena personata</i> <i>Osmia atriventris</i> <i>Osmia pumila</i> <i>Oxystoglossa confusa</i> <i>Oxystoglossa pura</i> <i>Oxystoglossa similis</i> <i>Pachymeria pudica</i> <i>Prosopis sayi</i> <i>Proteraner ranunculi</i> <i>Sapyga centrata</i> <i>Seladonia fasciata</i> <i>Siphona geniculata</i> <i>Syrphus americanus</i> <i>Syrphus ribesii</i> <i>Syrphus torvus</i> <i>Tetralonia belfragei</i> <i>Xanthidium luteolum</i> <i>Zaodontomerus calcaratus</i> <i>Bombus flavifrons dimidiatus</i> <i>Dialictus microlepoidea</i>		
<i>Arctostaphylos hookeri</i> ssp. <i>hookeri</i> (CA) (carpet manzanita or Monterey Pine manzanita)	<i>Andrena arctostaphyllae</i> <i>Andrena chalybea</i> <i>Andrena chlorogaster</i> <i>Andrena chlorura</i> <i>Andrena vandykei</i> <i>Anthophora pacifica</i> <i>Halictus ligatus</i> <i>Nomada</i> sp. <i>Osmia lignaria propinqua</i> <i>Phyllobaenus scaber</i> <i>Diachus auratus</i> <i>Limonius ornatus</i> <i>Louchaea</i> sp. <i>Platyura</i> sp. <i>Eristalis hirtus</i> <i>Sapyga angustata</i> <i>Anna's hummingbird</i> <i>Myopa curticornis</i> <i>Rhamphomyia</i> sp. <i>Bombylius major</i>	Fort Ord Military Reservation (Closed)	G3T2?; S2?
<i>Argythamnia aphoroides</i> (TX) (Hill Country silverbush)	<i>Archytas apicifer</i> <i>Callophrys gryneus</i> <i>Apis mellifera</i>	Canyon Lake, Camp Bowie -Brownwood	G2; S2
<i>Asclepias eastwoodiana</i> (NV) (Eastwood milkweed)	<i>Achalarus lycidas</i> <i>Acmaeodera pulchella</i> <i>Agapostemon radiatus</i> <i>Ageniella accepta</i> <i>Agrotis ypsilon</i>	Nellis Air Force Range	G2Q; S2

	<i>Allograpta obliqua</i> <i>Ammobia ichneumonea</i> <i>Ammobia nuda</i> <i>Ammobia pennsylvanica</i> <i>Anacrabro ocellatus</i> <i>Anoplus illinoensis</i> <i>Anosia plexippus</i> <i>Anthemoessa abrupta</i> <i>Anthemois centuncularis</i> <i>Anthidium cognatum</i> <i>Anthophora ursina</i> <i>Anthrax sinuosa</i> <i>Apis mellifera</i> <i>Arachnoproctonus ferrugineus</i> <i>Archytas analis</i> <i>Argynnис cybele</i> <i>Argyroselenis minimus</i> <i>Astatus bicolor</i> <i>Astatus unicolor</i> <i>Augochlora fervida</i> <i>Augochlora viridula</i> <i>Basilarchia archippus</i> <i>Batizonus algidus</i> <i>Belvosia bifasciata</i> <i>Belvosia unifasciata</i> <i>Bembix nubilipennis</i> <i>Bembix spinolae</i> <i>Bombias auricomus</i> <i>Bombias scutellaris</i> <i>Bombias separatus</i> <i>Bombus americanorum</i> <i>Bombus consimilis</i> <i>Bombus impatiens</i> <i>Callimorpha fulvicosta</i> <i>Calocoris rapidus</i> <i>Calythea albicincta</i> <i>Campsomeris confluenta</i> <i>Centrinus scutellum album</i> <i>Ceratina dupla</i> <i>Cerceris bicornuta</i> <i>Cerceris clypeata</i> <i>Cerceris compacta</i> <i>Cerceris finitima</i> <i>Cerceris fulvipes</i> <i>Cerceris fumipennis</i> <i>Cerceris rauí</i> <i>Cerceris robertsonii</i> <i>Chaetogaedia analis</i> <i>Chauliognathus pennsylvanicus</i> <i>Chloerocampa terfa</i> <i>Chloralictus albipennis</i> <i>Chloralictus pilosus</i> <i>Chloralictus sparsus</i> <i>Chloralictus tegularis</i> <i>Chloralictus versatus</i> <i>Chrysopanous thoe</i> <i>Cistogaster occidua</i> <i>Clytiomyia flava</i> <i>Coelioxys octodentata</i> <i>Colletes latitarsis</i> <i>Colletes nudus</i> <i>Compsomyia macellaria</i>		

	<p><i>Conops brachyrrhynchus</i> <i>Conops xanthopareus</i> <i>Culex stimulans</i> <i>Curtisapis coriacea</i> <i>Curtisapis forbesii</i> <i>Cyphopyga montivaga</i> <i>Drasteria erechtea</i> <i>Drepanium falciferum</i> <i>Elis 5-cincta</i> <i>Elis interrupta</i> <i>Elis obscura</i> <i>Ennyomma globosa</i> <i>Epargyreus tyturus</i> <i>Epeorus bifasciatus</i> <i>Epicauta vittata</i> <i>Epimelissodes atripes</i> <i>Epimelissodes obliqua</i> <i>Episyron biguttatus</i> <i>Eristalis aeneus</i> <i>Eristalis dimidiatus</i> <i>Eristalis latifrons</i> <i>Eristalis transversus</i> <i>Eumenes fraternus</i> <i>Euphoeades troilus</i> <i>Euphoria sepulchralis</i> <i>Euphydryas phaeton</i> <i>Euphyes metacomet</i> <i>Euphyes verna</i> <i>Eurymus philodice</i> <i>Euschistus variolarius</i> <i>Euvanessa antiopa</i> <i>Everes comyntas</i> <i>Evylaeus pectoralis</i> <i>Exoprosopa fasciata</i> <i>Exorista confinis</i> <i>Florilegus condignus</i> <i>Formica rufibarbis</i> <i>Graphomyia americana</i> <i>Gymnoprosopa clarifrons</i> <i>Halictus lerouxii</i> <i>Helicobia helicis</i> <i>Hemaris axillaris</i> <i>Heraclides cresphontes</i> <i>Holopyga ventralis</i> <i>Hyetodosia rufitibia</i> <i>Hylotoma humeralis</i> <i>Hypatus bachmanni</i> <i>Ichneumon flavizonatus</i> <i>Isodontia apicalis</i> <i>Isodontia macrocephala</i> <i>Jasoniades glaucus</i> <i>Laertias philenor</i> <i>Leionotus anormis</i> <i>Leionotus arvensis</i> <i>Leionotus foraminatus</i> <i>Limnophora narona</i> <i>Limochores manataqua</i> <i>Limochores taumas</i> <i>Linnaemyia comptula</i> <i>Lophopompilus atrox</i> <i>Lophopompilus philadelphicus</i> <i>Loxostege similalis</i></p>		
--	---	--	--

	Lucilia sylvarum Lygaeus turcicus Lygus pratensis Lyroda subita Machaeris stygia Macrodactylus angustatus Mallota cimbiciformis Mallota illinoensis Masiphya brasiliiana Megachile addenda Megachile brevis Megachile generosa Megachile mendica Megachile petulans Megastizus brevipennis Melanotus communis Melissodes agilis Melissodes bimaculata Melissodes comptoides Melissodes coreopsis Melissodes petalostemonis Melissodes trinodis Melissodes variabilis Melitoma taurea Mesogramma marginata Mesogramma polita Microbembex monodonta Midas clavatus Midas tibialis Neotrypetes barbatus Notoglossa americana Notoglossa frontalis Ocyptera tenuis Odontalictus ligatus Odontomyia cincta Oncopeltus fasciatus Opsidia gonioides Orthoneura nitida Oxybelus packardii Oxystoglossa confusa Oxystoglossa pura Oxystoglossa similis Pamphila hobomok Panzeria radicum Papilio asterias Paradidyma singularis Paragus bicolor Parempis clausa Peponapis pruinosa Phasioclista metallica Philanthus punctatus Pholisora catullus Pholisora hayhurstii Phorantha humeralis Phorantha purpurascens Phormia regina Photinus pyralis Phyciodes tharos Phymata wolffii Physocephala texana Physocephala tibialis Pieris rapae		
--	---	--	--

	Podisus spinosus Polistes pallipes Polistes rubiginosus Polistes variatus Polites peckius Polygona interrogationis Pontia protodice Priocnemoides fulvicornis Priocnemoides terminatus Priocnemoides unifasciatus Priononyx atrata Priononyx thomae Prosopis ziziae Proteraner ranunculi Protothyreopus rufifemur Pseudoplus phaleratus Pseudopyrellia cornicina Psithyrus laboriosus Psithyrus variabilis Rhipiphorus limbatus Sarcophaga cimbicis Sarcophaga sinuata Sayapis pugnata Sceliphron cementarius Scepsis fulvicollis Scolia bicincta Seladonia fasciata Senotainia rubriventris Senotainia trilineata Sepsis violacea Sesia 6-fasciata Sinea diadema Siphoplalia anomala Siphoplalia flaccidirostris Solenius interruptus Spallanzania hesperidarum Sparnopolius fulvus Speyeria idalia Sphaerophoria cylindrica Sphecius speciosus Sphecodes arvensis Sphecodium cressonii Sphex nigricans Sphex pictipennis Sphex procerus Stictia carolina Stomoxys calcitrans Stratiomyia meigenii Strymon titus Stylogaster biannulata Syritta pipiens Systoechus vulgaris Tachytes aurulentus Tachytes distinctus Tachytes elongatus Tachytes mandibularis Tachytes pepticus Tetralonia dilecta Tetralonia rosae Tetraopes tetraophthalmus Thecla calanus Thecla sylvinus		
--	---	--	--

	<i>Thorybes pylades</i> <i>Vespa maculata</i> <i>Vespa vidua</i> <i>Xanthomelana arcuata</i> <i>Xanthosarus latimanus</i> <i>Xenoglossa strenua</i> <i>Zodion obliquefasciatum</i> <i>Hylaeus cressuni cressoni</i> <i>Hylaeus episcopalnis</i> <i>Hylaeus modestus citrinifrons</i> <i>Sphecodes sp.</i> <i>Stelis sp.</i> <i>Mordella atrata albosuturalis</i> <i>Mordella hubbsi</i> <i>Zodion americanum</i> <i>Eristalis tenax</i> <i>Paragus sp.</i> <i>Stigmus sp.</i>		
Astragalus ackermanii (AZ, CA, NV) (Ackerman's astragalus or Ackerman's locoweed)	<i>Anthemois centuncularis</i> <i>Anthidium clypeodentatum</i> <i>Anthidium compactum</i> <i>Anthidium psoraleae</i> <i>Anthidium tenuiflorae</i> <i>Anthophora ursina</i> <i>Apis mellifera</i> <i>Bombias auricomus</i> <i>Bombias separatus</i> <i>Bombus americanorum</i> <i>Bombylius major</i> <i>Eurymus philodice</i> <i>Halictus parallelus</i> <i>Leionotus fundatus</i> <i>Megachile melanophaea calogaster</i> <i>Melissodes bimaculata</i> <i>Osmia atriventris</i> <i>Osmia calcarata</i> <i>Osmia collinsiae</i> <i>Osmia hypocrita</i> <i>Osmia illinoensis</i> <i>Osmia longula</i> <i>Osmia nigrobarbata</i> <i>Osmia pumila</i> <i>Papilio asterias</i> <i>Synhalonia tricinctella</i> <i>Tetralonia dilecta</i> <i>Tetralonia dubitata</i> <i>Tetralonia robertsonii</i> <i>Thanaos icelus</i> <i>Thanaos juvenalis</i> <i>Thanaos martialis</i> <i>Thorybes mexicana nevada</i> <i>Trichocrous</i>	Nellis Air Force Base	G2; S2
Atriplex cordulata (CA) (Heartscale or Heartscale saltbush)	Wind-pollinated	Naval Petroleum Reserve Number One	G2?; S2.2?
Atriplex patula ssp. spicata (CA) (spear saltbush)	Wind-pollinated	Travis Air Force Base	G5T2; S2.1
Baccharis plummerae ssp. glabrata (CA) (Plummer's baccharis)	<i>Augochlorella pomoniella</i> <i>Aedes increpitus</i> <i>Allotrichoma sp.</i>	Hunter-Liggett Military Reservation	G3T1; S1.2

	<p>Altica sp.</p> <p>Amobia sp.</p> <p>Anaspis atrata</p> <p>Anaspis durti</p> <p>Anthrenus lepidus</p> <p>Anthrenus new species</p> <p>Attalus sp.</p> <p>Cerceris sp.</p> <p>Cesmometopa new species</p> <p>Clausicella sp.</p> <p>Coccinella trifasciata juliana</p> <p>Colletes slevini</p> <p>Conophorus melanocer atus</p> <p>Cryptorhopalum apicale</p> <p>Cylindromyia sp.</p> <p>Dasytes sp.</p> <p>Diabrotica uigintimaculata</p> <p>Diachus auratus</p> <p>Dienoplus sp.</p> <p>Drapetis sp.</p> <p>Ectemnius continuus</p> <p>Ectemnius lapidarius</p> <p>Elfia sp.</p> <p>Epeorus americanus</p> <p>Eucerceris sp.</p> <p>Exema conspersa</p> <p>Formica occidua</p> <p>Gasteruption assectator</p> <p>Geron vitripennis</p> <p>Gymnoclytia sp.</p> <p>Hoppingiana sp.</p> <p>Hylaeus coloradensis</p> <p>Hylaeus cressuni cressoni</p> <p>Hylaeus episcopal</p> <p>Hylaeus modestus citrinifrons</p> <p>Hylaeus nevadensis</p> <p>Hylaeus polifolii</p> <p>Hylaeus rudbeckiae</p> <p>Leptocoris trivittatus</p> <p>Leucopsis affinis</p> <p>Lycaena orota</p> <p>Megaghile brevis onubrychia</p> <p>Metacosmus spp.</p> <p>Mordella atrata albosuturalis</p> <p>Mordella grandis</p> <p>Mordella hubbsi</p> <p>Mordellistena sp.</p> <p>Myospila meditabunda</p> <p>Nysius tenellus</p> <p>Orius tristicolor</p> <p>Oxybelus uniglumis quadrinotatus</p> <p>Paragus sp.</p> <p>Parancistrocerus acarigaster</p> <p>Pentaria trifasciata nubila</p> <p>Philanthus crabroniformis</p> <p>Pipunculus sp.cf varius</p> <p>Plebejus acmon</p> <p>Pollenia rufa</p> <p>Rhydinofaenus striatus</p> <p>Rhydlnofaenus spp.</p> <p>Scymnus sp.</p> <p>Senotainia cf trilineata</p>		
--	--	--	--

	<p>Spallanzania sp.</p> <p>Sphecodes sp.</p> <p>Spilomena sp.</p> <p>Stelis sp.</p> <p>Stenodynerus blandus</p> <p>Stenodynerus claremontensis</p> <p>Stigmus sp.</p> <p>Syritta pipiens</p> <p>Tephritis californica</p> <p>Thecophora nigripes</p> <p>Thevenemyia sp.</p> <p>Toxomerus occidentalis</p> <p>Trichocrous sp.</p> <p>Trichodes ornatus</p> <p>Trupanea wheeleri</p> <p>Vespa pennsylvanica</p> <p>Vespula vulgaris</p>		
Bartonia texana (TX) (Texas screwstem)	<p>Bees</p> <p>Butterflies</p>	<p>Sam Rayburn Reservoir</p>	G2; S2
Berberis harrisoniana (AZ) (Harrison's barberry)	<p>Andrena</p> <p>Ceratina</p> <p>Habropoda</p> <p>Halictus</p> <p>Osmia</p> <p>Synhalonia</p> <p>Trachandrena (an Andrena subgenus)</p>	<p>Barry M. Goldwater Air Force Range</p>	G1G2; S1S2
Brodiaea insignis (CA) (Kaweah brodiae)	<p>Acmaeodera retifer</p> <p>Acmaeops tumida</p> <p>Adela sp.</p> <p>Adela trigrapha</p> <p>Anthocaris sara</p> <p>Anthophora urbana</p> <p>Asemosyrphus polygrammus</p> <p>Augochlorella pomoniella</p> <p>Bombus californicus</p> <p>Bombus caliginosus</p> <p>Bombus flavifrons dimidiatus</p> <p>Bombus sylvicola</p> <p>Bombylius albicapillus</p> <p>Bombylius aurifer</p> <p>Bombylius aurifer</p> <p>Bombylius lancifer lancifer</p> <p>Bombylius major</p> <p>Bombyllus cachinnans</p> <p>Callimoxys sanguinocollis fuscipennis</p> <p>Carpascalis stegna</p> <p>Ceratina acantha</p> <p>Coenonympha californica</p> <p>Cryptorhopalum triste</p> <p>Diadasia angusticeps</p> <p>Dialictus microlepoides</p> <p>Empididae, unknown sp.</p> <p>Epicauta puncticollis</p> <p>Eschatocrepis constrictus</p> <p>Eulonchus marginatus</p> <p>Eulonchus smaragdinus</p> <p>Halictus rubicundus</p> <p>Hummingbird anna</p> <p>Hylaeus personatellus</p>	<p>Lake Kaweah</p>	G2; S2.1

	Listrupsis sp. Osmia exigua Osmia nemoris Schinia sp. Schinia sp. Sphaeruphorbia sulphoripes Symphoromyia pachyceras Synhalonia actuosa Synhalonia cordleyi Synhalonia delphiniae Synhalonia edwardsii Synhalonia frater albopilosa Synhalonia virgata Toxomerus marginatus Toxomerus occidentalis Trichocrous sp. Trichodes ornatus		
Calochortus obispoensis (CA) (San Luis mariposa lily)	Acanthoscelides pauperculus Acmaeodera retifer Acmaeops tumida Andrena sp. Anthaxia confusa Anthicidae, unknown sp. 1 Anthrenus lepidus Ashmeadiella salviae Augochlorella pomoniella Carpascalis stegna Chrysura inusitata Colletes fulgidus fulgidus Cradytes sp. A Diabrotica uigintimaculata Dialictus incompletus Dialictus microlepoides Eschatocrepis constrictus Eupeodes volucris Hylaeus basalis Lasioglossum trizonatum Lepidanthrax lauta Lepidanthrax sp. 1 Mordella atrata albosuturalis Mordella hubbsi Osmia nemoris Perdita californica Perdita distropica Perdita santaclarensis Schinia sp. E Siphonella sp. 1 Sphecodes sp. 10 Synhalonia actuosa Synhalonia cordleyi Trichocrous sp. G Trichodes ornatus	Camp San Luis Obispo	G2; S2.1
Calycadenia villosa (CA) (dwarf western rosinweed)	Agathis brevicornis Andrena orthocarpi Ashmeadiella californica californica Epeorus americanus Epicauta puncticollis Eschatocrepis constrictus Euodynerus annulatus sulphureus Geron sp.	Hunter-Liggett Military Reservation	G2; S2.1

	Geron subauratus Geron vitripennis Lepidanthrax lauta Lepidanthrax lauta Schinia sp. Sphaerophoria sulphoripes Thecophora nigra Xenoglossodes pomonae Zodion obliquefasciatum		
Camissonia guadalupensis ssp. Clementina (CA) (Clementine suncup)	Andrena	San Clemente Island Naval Reservation	G1T1; S1.2
Cardiospermum dissectum (TX) (Chihuahuan balloonvine)	Bees Wasps	La Reforma	G2; S2
Carex obispoensis (CA) (San Luis Obispo sedge)	Wind-pollinated	Camp San Luis Obispo	G2; S2.2
Chloris texensis (TX) (Texas windmill grass)	Wind-pollinated	Ellington Air Force Base	G2; S2
Chorizanthe breweri (CA) (Brewer's Spineflower)	Anthidium Ashmeadiella Ceratina Chalicodoma (now a subgenus of Megachile) Exomalopsis Halictus Hoplitis Perdita	Camp San Luis Obispo	G2; S2.2
Cirsium crassicaule (CA) (slough thistle)	Agapostemon radiatus Agapostemon texanus Agapostemon viridulus Amegilla walshii Anosia plexippus Apis mellifera Argynnис cybele Atrytone zabulon Basilarchia archippus Bombias auricomus Bombias scutellaris Bombias separatus Bombus americanorum Bombus consimilis Bombus impatiens Callidryas eubule Ceratina dupla Chloralictus pilosus Chloralictus pruinosus Chloralictus sparsus Chloralictus versatus Colletes euplohi Cyphopyga montivaga Deilephila lineata Diabrotica longicornis Emphor bombiformis Epimelissodes obliqua Euphoeades troilus Euryimus philodice Evylaeus pectoralis Exoprosopa fasciata Hemaris thysbe Heraclides cresphontes	Naval Petroleum Reserve Number One	G2; S2.2

	<i>Jasoniades glaucus</i> <i>Laertias philenor</i> <i>Limochores taumas</i> <i>Lygaeus turcicus</i> <i>Megachile verbesinae</i> <i>Melissodes agilis</i> <i>Melissodes bimaculata</i> <i>Melissodes cnici</i> <i>Melissodes coloradensis</i> <i>Melissodes comptoides</i> <i>Melissodes simillima</i> <i>Melissodes trinodis</i> <i>Melissodes variabilis</i> <i>Melitoma tauraea</i> <i>Neotrypetes truncatus</i> <i>Odontalictus ligatus</i> <i>Papilio asterias</i> <i>Paranomia nortonii</i> <i>Phyciodes tharos</i> <i>Physocephala tibialis</i> <i>Polites peckius</i> <i>Pontia protodice</i> <i>Psithyrus laboriosus</i> <i>Psithyrus variabilis</i> <i>Sayapis pugnata</i> <i>Scepsis fulvicollis</i> <i>Speyeria idalia</i> <i>Systoechus vulgaris</i> <i>Thorybes bathyllus</i> <i>Trichius piger</i> <i>Triepeolus concavus</i> <i>Triepeolus concolor</i> <i>Triepeolus donatus</i> <i>Triepeolus nevadensis</i> <i>Triepeolus remigatus</i> <i>Typocerus sinuatus</i> <i>Vanessa atalanta</i> <i>Vanessa cardui</i> <i>Xanthidia nicippe</i> <i>Xanthosarus latimanus</i>		
<i>Comarostaphylis diversifolia</i> ssp. <i>diversifolia</i> (CA) (Summer holly)	<i>Bombus</i> sp. <i>Amazilia tzacatl</i> <i>Hylocharis leucotis</i> <i>Cynanthus latirostris</i>	Miramar Naval Air Station	G3?T2; S2.2
<i>Cordylanthus orcuttianus</i> (CA) (Orcutt's bird's beak)	<i>Anthidium placidum</i> <i>Ashmeadiella</i> <i>Dianthidium</i> <i>Halictus impavidus</i> <i>Heriades</i> <i>Hylaeus</i> <i>Megachile spinotulata</i>	Imperial Beach Naval Air Station	G2; S1.1
<i>Corethrogyne filaginifolia</i> var. <i>incana</i> (CA) (California corethrogyne)	<i>Anthophora rhodothorax</i> <i>Melissodes sabinensis</i> <i>Ceratina</i> <i>Dianthidium</i> <i>Exomalopsis</i>	North Island Naval Air Station	G4T1; S1.1
<i>Croton alabamensis</i> var. <i>texensis</i> (TX) (Alabama croton)	<i>Anthidiellum</i> <i>Colletes</i> <i>Exomalopsis</i>	Fort Hood	G3T1; S1

	Halictus Heriades Hylaeus Megachile Melissodes Mesoxaea Nomia Osmia Oxaea Perdita Prosapis (a subgenus of Hylaeus) Prosopis (a subgenus of Hylaeus) Protandrena Synhalonia Xylocopa		
Cryptantha traskiae (CA) (Trask's cryptantha)	Andrena Anthidium Anthocopa Ashmeadiella Chelostoma Colletes Conanthalicus Dufourea Halictoides Halictus Heriades Hesperapis Hoplitis Hylaeus Megachile Osmia Proteriades Titusella (this is Ashmeadiella).	San Clemente Island Naval Reservation	G2; S2.2
Cymopterus cinerarius (CA, NV) (Gray springparsley)	Prosopis (a subgenus of Hylaeus) Osmia	Hawthorne Army Ammunition Depot	G2G3; S1?
Delphinium parryi ssp. blochmaniae (CA) (Parry's larkspur or San Bernardino larkspur)	Agapostemon radiatus Anosia plexippus Anthemoessa abrupta Anthophora ursina Atrytone zabulon Bombias auricomus Bombias separatus Bombus americanorum Bombus consimilis Bombus impatiens Ceratina dupla Deilephila lineata Epargyreus tityrus Euphoeades troilus Euryimus philodice Halictus lerouxii Jasoniades glaucus Papilio asterias Tetralonia dilecta Trochilus colubris Anthidium pallidiclypeum	Vandenberg Air Force Base	G4T2; S2.2
Dithyrea maritima (CA) (beach shieldpod)	Andrena Anthophorula Hesperapis Perdita	Vandenberg Air Force Base	G2; S2.1

<i>Draba standleyi</i> (TX, NM) (Standley's whitegrass)	Syrphidae	Fort Bliss - McGregor Range*	G2G3; S1 (TX), S2 (NM)
<i>Dudleya virens</i> ssp. <i>virens</i> (CA) (green liveforever or green dudleya or bright green dudleya)	Andrena Anthidium Anthophora Halictus Synhalonia	San Clemente Island Naval Reservation San Nicolas Island Naval Reservation	G2T1; S1.2
<i>Dudleya viscida</i> (CA) (sticky dudleya)	Andrena Anthidium Anthophora Halictus Synhalonia	Camp Pendleton Marine Corps Base	G2; S2.2
<i>Ericameria compacta</i> (CA, NV) (Charleston mountain goldenbush)	Anthidium Anthophora Colletes Pterandrena (a subgenus of Andrena) Melissodes	Nellis Air Force Base	G2?; S2?
<i>Erigeron arisolioides</i> (CA, AZ) (arid thorne fleabane)	Agapostemon viridulus Alcidamea simplex Aldrichia ehrmanii Anacrabro ocellatus Ancistrocerus tigris Ancyloxypha numitor Apinops atra Apis mellifera Bombias separatus Bombylius atriceps Bracon longicauda Calocoris rapidus Calythea albicincta Centrias americanus Centrias erigerontis Ceratina dupla Ceratosoma fasciata Cerceris clypeata Chloralictus albipennis Chloralictus pilosus Chloralictus pruinosus Chloralictus sparsus Chloralictus tegularis Chloralictus versatus Chloralictus zephyrus Chrysopanous thoe Cistogaster occidua Cistogaster pallasi Colletes euplohi Collops 4-maculatus Corizus lateralis Curtisapis coriacea Diabrotica 12-punctata Epeorus bifasciatus Epeorus pusillus Epigrimyia floridensis Epigrimyia polita Eristalis dimidiatus Eristalis latifrons Eristalis tenax Eucerceris zonatus Everes comyntas Evylaeus pectoralis Exoprosopa fascipennis Gnathosmia georgica	Fort Huachuca	G2; S2

	<p><i>Gymnosoma fuliginosa</i> <i>Helicobia helicis</i> <i>Holcopasites illinoensis</i> <i>Holonomada superba</i> <i>Leionotus anomis</i> <i>Leionotus clypeatus</i> <i>Leionotus foraminatus</i> <i>Leionotus histrionalis</i> <i>Leionotus illinoensis</i> <i>Leionotus ziziae</i> <i>Leucospis affinis</i> <i>Leucostoma atra</i> <i>Limnophora narona</i> <i>Limochores taumas</i> <i>Lobioptera indecora</i> <i>Lygus pratensis</i> <i>Machaeris stygia</i> <i>Megachile brevis</i> <i>Mesogramma geminata</i> <i>Mesogramma marginata</i> <i>Microstelis lateralis</i> <i>Mordellistena comata</i> <i>Musca domestica</i> <i>Neotrypetes productus</i> <i>Neotrypetes truncatus</i> <i>Nomada cressonii</i> <i>Nomada denticulata</i> <i>Notoglossa frontalis</i> <i>Ocyptera lata</i> <i>Ocyptera nigra</i> <i>Ocyptera tenuis</i> <i>Odontalictus ligatus</i> <i>Oncodocera leucoprocta</i> <i>Onomyia loraria</i> <i>Oxystoglossa confusa</i> <i>Oxystoglossa similis</i> <i>Pachyophthalmus floridensis</i> <i>Paragus bicolor</i> <i>Paragus tibialis</i> <i>Parempis clausa</i> <i>Phorantha humeralis</i> <i>Phorantha purpurascens</i> <i>Phorbia platura</i> <i>Phyciodes tharos</i> <i>Polistes variatus</i> <i>Polites peckius</i> <i>Pollenia rufa</i> <i>Prosopis euploea</i> <i>Prosopis pygmaea</i> <i>Prosopis ziziae</i> <i>Pseudopyrellia cornicina</i> <i>Sarcophaga cimbicis</i> <i>Sarcophaga sinuata</i> <i>Scepsis fulvicollis</i> <i>Seladonia fasciata</i> <i>Senotainia rubriventris</i> <i>Senotainia trilineata</i> <i>Siphona geniculata</i> <i>Sphaerophoria cylindrica</i> <i>Sphecodium cressonii</i> <i>Sphex pictipennis</i> <i>Sphex vulgarius</i></p>		
--	--	--	--

	<i>Stelidium trypetinum</i> <i>Syritta pipiens</i> <i>Tachytes elongatus</i> <i>Telephorus flavipes</i> <i>Tetrachrysis montana</i> <i>Thanaos juvenalis</i> <i>Toxophora amphitea</i> <i>Trachandrena mariae</i> <i>Trichius piger</i> <i>Tropidia mamillata</i> <i>Xanthidia nicippe</i> <i>Zaodontomerus calcaratus</i> <i>Zodion fulvifrons</i>		
Erigeron ovinus (NV) (sheep fleabane)	<i>Agapostemon viridulus</i> <i>Alcidamea simplex</i> <i>Aldrichia ehrmanii</i> <i>Anacrabro ocellatus</i> <i>Ancistrocerus tigris</i> <i>Ancyloxypha numitor</i> <i>Apinops atra</i> <i>Apis mellifera</i> <i>Bombias separatus</i> <i>Bombylius atriceps</i> <i>Bracon longicauda</i> <i>Calocoris rapidus</i> <i>Calythea albincincta</i> <i>Centrius americanus</i> <i>Centrius erigerontis</i> <i>Ceratina dupla</i> <i>Ceratosoma fasciata</i> <i>Cerceris clypeata</i> <i>Chloralictus albipennis</i> <i>Chloralictus pilosus</i> <i>Chloralictus pruinosus</i> <i>Chloralictus sparsus</i> <i>Chloralictus tegularis</i> <i>Chloralictus versatus</i> <i>Chloralictus zephyrus</i> <i>Chrysophanus thoe</i> <i>Cistogaster occidua</i> <i>Cistogaster pallasii</i> <i>Colletes euplohi</i> <i>Collops 4-maculatus</i> <i>Corizus lateralis</i> <i>Curtisapis coriacea</i> <i>Diabrotica 12-punctata</i> <i>Epeolus bifasciatus</i> <i>Epeolus pusillus</i> <i>Epigrimyia floridensis</i> <i>Epigrimyia polita</i> <i>Eristalis dimidiatus</i> <i>Eristalis latifrons</i> <i>Eristalis tenax</i> <i>Eucerceris zonatus</i> <i>Everes comyntas</i> <i>Evylaeus pectoralis</i> <i>Exoprosopa fascipennis</i> <i>Gnathosmia georgica</i> <i>Gymnosoma fuliginosa</i> <i>Helicobia helicis</i> <i>Holcopasites illinoensis</i> <i>Holonomada superba</i>	Nellis Air Force Base Nevada Test Site	G2; S2

	<p><i>Leionotus anormis</i> <i>Leionotus clypeatus</i> <i>Leionotus foraminatus</i> <i>Leionotus histrionalis</i> <i>Leionotus illinoensis</i> <i>Leionotus ziziae</i> <i>Leucospis affinis</i> <i>Leucostoma atra</i> <i>Limnophora narona</i> <i>Limochores taumas</i> <i>Lobioptera indecora</i> <i>Lygus pratensis</i> <i>Machaeris stygia</i> <i>Megachile brevis</i> <i>Mesogramma geminata</i> <i>Mesogramma marginata</i> <i>Microstelis lateralis</i> <i>Mordellistena comata</i> <i>Musca domestica</i> <i>Neotrypetes productus</i> <i>Neotrypetes truncatus</i> <i>Nomada cressonii</i> <i>Nomada denticulata</i> <i>Notoglossa frontalis</i> <i>Ocyptera lata</i> <i>Ocyptera nigra</i> <i>Ocyptera tenuis</i> <i>Odontalictus ligatus</i> <i>Oncodocera leucoprocta</i> <i>Oncomyia loraria</i> <i>Oxystoglossa confusa</i> <i>Oxystoglossa similis</i> <i>Pachyophthalmus floridensis</i> <i>Paragus bicolor</i> <i>Paragus tibialis</i> <i>Parempis clausa</i> <i>Phorantha humeralis</i> <i>Phorantha purpurascens</i> <i>Phorbia platura</i> <i>Phyciodes tharos</i> <i>Polistes variatus</i> <i>Polites peckius</i> <i>Pollenia rufa</i> <i>Prosopis euplophi</i> <i>Prosopis pygmaea</i> <i>Prosopis ziziae</i> <i>Pseudopyrellia cornicina</i> <i>Sarcophaga cimbicis</i> <i>Sarcophaga sinuata</i> <i>Scepsis fulvicollis</i> <i>Seladonia fasciata</i> <i>Senotainia rubriventris</i> <i>Senotainia trilineata</i> <i>Siphona geniculata</i> <i>Sphaerophoria cylindrica</i> <i>Sphecodium cressonii</i> <i>Sphex pictipennis</i> <i>Sphex vulgaris</i> <i>Stelidium trypetinum</i> <i>Syritta pipiens</i> <i>Tachytes elongatus</i> <i>Telephorus flavipes</i></p>		

	Tetrachrysis montana Thanaos juvenalis Toxophora amphitea Trachandrena mariae Trichius piger Tropidia mamillata Xanthidia nicippe Zaodontomerus calcaratus Zodion fulvifrons		
Erigeron sivinskii (NM) (Sivinki's fleabane)	Apidae Halictidae Vespidae Halictidae Vespidae Anthophoridae Syrphidae Cantheridae	Fort Wingate Depot Activity (Closed)	G2; S2
Eriogonum concinnum (CA, NV) (mourning buckwheat)	Andrena Anthidium Ashmeadiella Chelostoma Dianthidium Halictoides Heriades Hesperapis Hoplitis Lithurgus Megachile Osmia Proteriades.	Nellis Air Force Range	G2; S2
Eriogonum grande var. Timorum (CA) (San Miguel buckwheat)	Andrena Anthidium Ashmeadiella Chelostoma Dianthidium Halictoides Heriades Hesperapis Hoplitis Lithurgus Megachile Osmia Proteriades	San Nicolas Island Naval Reservation	G3T1; S1.1
Eriogonum nudum var. murinum (CA) (naked buckwheat)	Halictoides davidsoni Halictoides spilurus Halictus brunneiventris Hylaeus lunicraterius Hylaeus timberlakei Perdita claypolei Perdita jucunda Perdita yosemitensis Prosapis citrinifrons Prosopis personatellus Andrena Anthidium Ashmeadiella Chelostoma Dianthidium Halictoides Heriades	Lake Kaweah	G5T2; S2.2

	Hesperapis Hoplitis Lithurgus Megachile Osmia Proteriades		
Eriophyllum mohavense (CA) (Barstow wooly sunflower)	Andrena Ashmeadiella Melitta sp. Colletes Diadasia Dianthidium Halictoides Halictus Heriades Osmia Perdita Pterandrena (a subgenus of Andrena) titusella (now Ashmeadiella) Trachusa	Cuddeback Lake Air Force Range Edwards Air Force Base	G2; S2.2
Eriophyllum nevinii (CA) (canyon silver wooly sunflower)	Andrena Ashmeadiella Melitta sp. Colletes Diadasia Dianthidium Halictoides Halictus Heriades Osmia Perdita Pterandrena (a subgenus of Andrena) Titusella (now Ashmeadiella) Trachusa	San Clemente Island Naval Reservation	G2; S2.3
Eryngium pendletonensis (CA) (Pendleton button celery)	Acontia candefacta Agapostemon radiatus Allograpta obliqua Alphora aeneoventris Alphora fumosa Alydus eurinus Ammobia ichneumonea Ammobia nuda Ammobia pennsylvanica Ancistrocerus campestris Anosia plexippus Anthrax alternata Anthrax fulvohirta Apis mellifera Arachnoproctonus ferrugineus Archytas analis Astatus unicolor Augochlora fervida Basilarchia archippus Belvosia bifasciata Bembix nubillipennis Bembix spinolae Bicyrtes quadrifasciata Bicyrtes ventralis Bombias separatus Bombus americanorum Bombus impatiens	Camp Pendleton Marine Corps Base	G1; S1.1

	Calliopsis andreniformis Centrinus scutellum album Cephen texanus Ceratina dupla Cerceris bicornuta Cerceris fumipennis Cerceris prominens Cerceris raui Cercyonis alope Ceropales elegans Charidryas nycteis Chloralictus pilosus Chloralictus sparsus Chloralictus versatus Chrysophanus thoe Cistogaster occidua Cistogaster pallasii Coelioxys 8-dentata Coelioxys sayi Coenosia antica Colletes speciosus Compsomyia macellaria Conops brachyrrhynchus Conops xanthopareus Cryptocephalus insertus Curtisapis forbesii Elis 5-cincta Elis interrupta Elis obscura Elis thoracica Epeorus bifasciatus Eristalis aeneus Eristalis latifrons Eristalis tenax Eristalis transversus Eucerceris zonatus Eumenes belfragei Eumenes fraternus Euphoeades troilus Euphoria sepulchralis Eurymus philodice Everes comyntas Evylaeus arcuatus Evylaeus pectoralis Exoprosopa decora Exoprosopa fasciata Exoprosopa fascipennis Geron rufipes Gymnosoma fuliginosa Halictus lerouxii Halictus parallelus Isodontia apicalis Laertias philenor Leionotus anormis Leionotus arvensis Leionotus dorsalis Leionotus foraminatus Leionotus vagus Leskia analis Leucospis affinis Limochores taumas Lispia uliginosa		
--	---	--	--

	Lophopompilus atrox Lophopompilus philadelphicus Lygaeus turcicus Machaeris stygia Megachile brevis Megachile mendica Megachile petulans Megastizus brevipennis Mesogramma geminata Mesogramma marginata Mesogramma polita Midas clavatus Midas tibialis Milesia ornata Monobia quadridens Mutilla hexagona Myodites fasciatus Nemognatha vittigera Nemotelus glaber Notoglossa americana Notoglossa frontalis Ocyptera lata Ocyptera tenuis Odontalictus ligatus Odontomyia cincta Oncomyia loraria Oncopeltus fasciatus Orthoneura nitida Oxybelus quadrinotatus Paragus tibialis Paranomia nortonii Philanthus punctatus Philanthus ventilabris Pholisora catullus Phorantha asteris Phorantha humeralis Phorantha magna Phorantha pruinosa Phorbia acra Phyciodes tharos Phyocephala tibialis Poecilopompilus navus Polistes variatus Polites peckius Pompilooides americanus Pontia protodice Priocnemoides fulvicornis Priononyx atrata Priononyx thomae Prosopis pygmaea Prosopis ziziae Protocalliphora splendida Protothyreopus rufifemur Pseudocrabro chrysargirus Pseudopyrellia cornicina Psysocephala texana Pyrota terminata Rhipiphorus limbatus Sarcophaga assidua Scepsis fulvicollis Scolia bicincta Scolia nobilitata		
--	---	--	--

	<i>Seladonia fasciata</i> <i>Senotainia rubriventris</i> <i>Senotainia trilineata</i> <i>Carmenta bassiformis</i> <i>Spallanzania hesperidarum</i> <i>Speyeria idalia</i> <i>Sphaerophoria cylindrica</i> <i>Sphecodes arvensis</i> <i>Sphecodium cressonii</i> <i>Sphex gracilis</i> <i>Sphex nigricans</i> <i>Sphex pictipennis</i> <i>Sphex vulgaris</i> <i>Spragueia leo</i> <i>Stizus unicinctus</i> <i>Syritta pipiens</i> <i>Systoechus vulgaris</i> <i>Tabanus lineola</i> <i>Tachysphex belfragei</i> <i>Tachytes aurulentus</i> <i>Tachytes distinctus</i> <i>Tachytes elongatus</i> <i>Trichius piger</i> <i>Trichophora ruficauda</i> <i>Trichopoda pennipes</i> <i>Triepeolus lunatus</i> <i>Uranotes melinus</i> <i>Utetheisa bella</i> <i>Zodion fulvifrons</i> <i>Zodion nanellum</i> <i>Zodion obliquefasciatum</i>		
<i>Erysimum ammophilum</i> (CA) (coast wallflower)	<i>Andrena</i> <i>Anthidium</i> <i>Anthophora</i> <i>Colletes</i> <i>Halictus</i> <i>Megachile</i> <i>Melissodes</i> <i>Osmia</i> <i>Synhalonia</i>	Fort Ord Military Reservation (Closed)	G2; S2.2
<i>Eschscholzia minutiflora</i> ssp. <i>twisselmannii</i> (CA) (pygmy poppy or little gold poppy)	<i>Dufourea desertorum</i> <i>Dufourea malacothricis</i> <i>Dufourea vernalis</i> <i>Hesperapis parva</i> <i>Perdita carinata</i> <i>Perdita inflexa</i> <i>Perdita mortuaria</i> <i>Perdita mucronata</i> <i>Perdita robustula</i>	Edwards Air Force Base	G5T2; S2.2
<i>Escobaria organensis</i> (TX-NM) (organ mountain foxtail cactus)	<i>Halictidae</i>	White Sands Missile Range* Fort Bliss - McGregor Range*	G2; S2
<i>Escobaria villardii</i> (NM) (Sacramento mountain foxtail cactus)	<i>Halictidae</i>	Holloman Air Force Base	G2; S2
<i>Fritillaria striata</i> (CA) (striped adobe lily)	<i>Cilissa</i> (this genus is now <i>Melitta</i>).	Success Lake	G2; S2.1
<i>Galium californicum</i> ssp. <i>luciense</i> (CA, NV)	<i>Chloralictus obscurus</i> <i>Cistogaster occidua</i>	Hunter-Liggett Military Reservation	G5T2; S2.3

(California bedstraw)	<i>Coenosia antica</i> <i>Euphorocera claripennis</i> <i>Helicobia helicis</i> <i>Mesogramma marginata</i> <i>Pipiza pubescens</i> <i>Prosopis pygmaea</i> <i>Syritta pipiens</i>		
Gambelia speciosa (CA) (island bush snapdragon, showy greenbright island snapdragon, showy greenbright, showy island snapdragon)	Hummingbird Bees	San Clemente Island Naval Reservation	G2; S2.2
Glossopetalon pungens var. glabrum (NV) (dwarf greasebush, pacific greasebush, smooth greasebush, smooth pungent forsellesia)	Flies (Syrphids) Bees	Nellis Air Force Base	G2G3T1Q; S1
Hazardia cana (CA) (San Clemente Island hazardia, island hazardia)	Bees Flies Beetles	San Clemente Island Naval Reservation	G2; S2.2
Hedeoma pulcherrima (NM) (veiny false pennyroyal, White Mountain false pennyroyal)	<i>Calliopsis andreniformis</i> <i>Ceratina dupla</i> <i>Chloralictus tegularis</i> <i>Chloralictus versatus</i> <i>Mesogramma marginata</i> <i>Odontalictus ligatus</i> <i>Oxystoglossa confusa</i> <i>Oxystoglossa similis</i>	White Sands Missile Range*	G2; S2
Hemizonia parryi ssp. australis (CA) (Parry's spikeweed, pappose tarweed)	<i>Ashmeadiella californica californica</i> <i>Augochlorella pomoniella</i> <i>Bombus occidentalis nigroscutatus</i> <i>Cardiochiles californicus</i> <i>Dialictus incompletus</i> <i>Epeorus minimus</i> <i>Epicauta puncticollis</i> <i>Eristalis hirtus</i> <i>Geron grandis</i> <i>Geron sp.</i> <i>Geron subauratus</i> <i>Geron vitripennis</i> <i>Lordotus zonus</i> <i>Meledonus sp.</i> <i>Mochlosoma sp.</i> <i>Ochlodes sylvanoides</i> <i>Oligodranes sp.</i> <i>Poecilanthrax willistonii</i> <i>Schinia sp.</i> <i>Sphaeruphorbia sulphoripes</i> <i>Stenodynerus blandus</i> <i>Syrphus opinator</i> <i>Toxomerus occidentalis</i> <i>Triepeolus californicus</i> <i>Vespa pennsylvanica</i> <i>Villa edititoides</i> <i>Villa inops</i> <i>Villa lateralis ater</i> <i>Villa lateralis lateralis</i>	Seal Beach Naval Weapons Station	G4?T2; S2.1

	Villa sinuosa jaennickeana Xenoglossodes pomonae		
Heterotheca rutteri (AZ) (Huachuca groundsel, Rutler's false groundsel)	Andrena Calliopsis Ceratina Colletes Dianthidium Exomalopsis Heteranthidium Megachile spp., Melissodes spp. Nomia Panurginus Panurpus spp., Perdita spp. Pseudopanurgus	Fort Huachuca	G2; S2
Hexalectris warnockii (AZ) (Texas crested coralroot)	(large bees, likely Bombus, Xylocopa)	Fort Huachuca	G2; S1
Hexalectris warnockii (TX) (Texas Crested Coralroot)	(large bees, likely Bombus, Xylocopa)	Camo Barkeley	G2G3; S2
Horkelia cuneata ssp. sericea (CA) (wedgeleaf horkelia)	Andrena medionitens Andrena medionitens Andrena sp Anthidium tenuiflorae Aplomya sp. Boettcheria litorosa Bombus flavifrons dimidiatus Bombus sylvicola Bombylius aurifer Calliphora terraenovae Dialictus microlepoides Dolichopus multisetosus Empididae, unknown sp. Eristalis hirtus Evylaeus sp 2 Hercostomus unicolor Hylaeus basalis Lasiops medius Limnophora narona Megachile melanophaea calogaster Metasyrphus lapponicus Nomadopsis edwardsii Orphilus subnitidus Pogonomyia amnicola Protophormia terraenovae Rhamphomyia spp. Sarcophaga spp. Silis sp Spilogona magnipunctata Symphoromyia californica Symphoromyia fulvipes Symphoromyia powelli Tenthredo anomocera Trichocrous sp Villa sp.	Vandenberg Air Force Base Fort Ord Military Reservation (Closed)	G4T1; S1.1
Hulsea vestita ssp. inyoensis (NV) (pumice alpengold)	Bombus sylvicola Lepidoptera, unknown moth sp.	Nellis Air Force Range	G5T2; S2
Hymenoxyx vaseyi (NM) (Vassey's rubberweed)	Bee Wasp	White Sands Missile Range*	G2?; S2?

	Fly Lacewing True bug Beetle Grasshopper		
<i>Isocoma arguta</i> (CA) (Carquinez goldenbush)	<i>Apis mellifera</i>	Travis Air Force Base	G1; S1.1
<i>Juncus leiospermus</i> var. <i>ahartii</i> (CA) (red bluff dwarf rush)	<i>Eristalis hirtus</i> <i>Thaumatomy ia pulla</i> <i>Elater sp</i> <i>Hylemya garrettii</i> <i>Hylemya tenuis</i>	Mather Air Force Base (Closed)	G2T1; S1.2
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i> (CA) (yellow rayed lasthenia, yellow rayed goldfields)	<i>Andrena</i> <i>Anthophora</i> <i>Calliopsis</i> <i>Chelostoma</i> <i>Colletes</i> <i>Diandrena</i> <i>Halictoides</i> <i>Halictus</i> <i>Megachile</i> <i>Melissodes</i> <i>Micralictoides</i> <i>Panurginus</i> <i>Perdita</i> <i>Pterandrena</i> (a subgenus of <i>Andrena</i>)	Vandenberg Air Force Base, Camp Pendleton Marine Corps Base, Imperial Beach Naval Air Station, Miramar Naval Air Station, Point Mugu Pacific Missile Test Center	G4T2; S2.1
<i>Lathyrus jepsonii</i> ssp. <i>iepsonii</i> (CA) (delta tule pea, Jepson's pea)	<i>Bombus caliginosus</i> <i>Synhalonia frater albopilosa</i> <i>Andrena plana</i> <i>Bombylius major</i> <i>Synhalonia frater albopilosa</i> <i>Xylocopa tabanaiformis</i>	Concord Naval Weapons Station, Skaggs Island Naval Security Group Activity	G5T2; S2.2
<i>Lavatera assurgentiflora</i> ssp. <i>assurgentiflora</i> (CA) (mission mallow, tree mallow, island mallow)	<i>Bombus</i> <i>Xylocopa</i> <i>Diadasia</i>	San Nicolas Island Naval Reservation	G2T2; S2.1
<i>Layia heterotricha</i> (CA) (pale yellow layia, pale yellow tidytips)	<i>Andrena medlonitens</i> <i>Acmaeops tumida</i> <i>Adela flammeusella</i> <i>Adela sp.</i> <i>Agapostemon texanus</i> <i>Andrena baeriae</i> <i>Andrena duboisi</i> <i>Andrena limnanthis</i> <i>Andrena nigroclypeata</i> <i>Andrena pensilis</i> <i>Andrena subchalybea</i> <i>Bombylius major</i> <i>Bombylius sp.</i> <i>Bombyllus cachinnans</i> <i>Coccinella californica</i> <i>Coenonympha californica</i> <i>Dalmannia pacifica</i> <i>Eschatocrepis constrictus</i> <i>Euphydryas editha</i> <i>Melanodexia sp.</i> <i>Osmia montana quadriiceps</i> <i>Osmia nemoris</i> <i>Pantarbes capito</i>	Hunter-Liggett Military Reservation	G1; S1.1

	Rhamphomyia sp. A Schinia sp. Schoenomyza litorella Sphaerophoria sulphoripes Syrphus opinator Thecophora nigripes Trichocrous sp.		
Layia jonesii (CA) (Jones' Tidytips, Jone's layia)	Andrena medlonitens Acmaeops tumida Adela flammeusella Adela sp. Agapostenum texanus Andrena baeriae Andrena duboisi Andrena limnanthis Andrena nigroclypeata Andrena pensilis Andrena subchalybea Bombylius major Bombylius sp. Bombyllus cachinnans Coccinella californica Coenonympha californica Dalmannia pacifica Eschatocephis constrictus Euphydryas editha Melanodexia sp. Osmia montana quadriiceps Osmia nemoris Pantarbes capito Rhamphomyia sp. A Schinia sp. Schoenomyza litorella Sphaerophoria sulphoripes Syrphus opinator Thecophora nigripes Trichocrous sp.	Camp San Luis Obispo	G1; S1.1
Legenere limosa (CA) (false venus lookingglass)	Small bees	Mather Air Force Base (Closed)	G2; S2.2
Liatris cymosa (TX) (branched blazing star, aggie-land gayfeather, branched blazing star)	Agapostemon viridulus Anosia plexippus Apis mellifera Basilarchia archippus Bombias separatus Bombus americanorum Bombus consimilis Bombus impatiens Ceratina dupla Epargyreus titurus Epimelissodes obliqua Eristalis latifrons Eristalis tenax Euphoeades troilus Euphyes metacomet Eurymus philodice Exoprosopa fasciata Laertias philenor Limochores taumas Melissodes agilis Melissodes coloradensis	Somerville Lake	G2; S2

	Melissodes nivea Odontalicus ligatus Papilio asterias Physocephala texana Pieris rapae Polites peckius Sayapis sayi Scepsis fulvicollis Speyeria idalia Sphex vulgaris Stylogaster biannulata Systoechus vulgaris Triepeolus concavus Triepeolus concolor Triepeolus remigatus Xanthosarus latimanus Zerene caesonia		
Linanthus pygmaeus ssp. pygmaeus (CA) (pygmy linanthus, pygmy arctic aster)	Emphoropsis sp. Adela sp. Anastochus melanohalteralis Andrena nigrocaerulea Andrena plana Bombylius albicapillus Bombylius aurifer Bombylius major Bombyllus cachinnans Coenonympha californica Dilophus strigilatus Eristalis tenax Eschatocrepis constrictus Euphydryas editha Hylaeus personatellus Leucophora obtusa Melanostoma Metasyrphus sp. Osmia nemoris Phycloides mylitta Rhamphomyia sp. Scaeva pyrastris Schinia sp. Sphaeruphorbia sulphoripes Synhalonia actuosa Synhalonia frater albopilosa Trichocrous sp. Trichodes ornatus Xylocopa tabanaformis	San Clemente Island Naval Reservation	G4T1; S1.2
Linanthus serrulatus (CA) (madera linanthus, meadow goldenrod)	Emphoropsis sp. Adela sp. Anastochus melanohalteralis Andrena nigrocaerulea Andrena plana Bombylius albicapillus Bombylius aurifer Bombylius major Bombyllus cachinnans Coenonympha californica Dilophus strigilatus Eristalis tenax Eschatocrepis constrictus Euphydryas editha	Pine Flat Reservoir	G1?; S1?

	Hylaeus personatellus Leucophora obtusa Melanostoma Metasyrphus sp. Osmia nemoris Phycloides mylitta Rhamphomyia sp. Scaeva pyrastri Schinia sp. Sphaeruphorbia sulphoripes Synhalonia actuosa Synhalonia frater albopilosa Trichocrous sp. Trichodes ornatus Xylocopa tabanaformis		
Loeflingia squarrosa ssp. artemisiarum (CA) (spreading pygmyleaf, California loeflingia, spreading pygmyleaf)	small bees Halictidae small flies	Edwards Air Force Base, Sierra Army Depot	G5T2T3; S2.2
Lomatium insulare (CA) (San Nicolas Island lomatium, San Nicholas biscuitroot)	Andrena chlorogaster Andrena microchlora Andrena pallidiscopa Anthrenus lepidus Cheilosia occidentalis Cylindromyia sp. Eschatocrepis constrictus Euphydryas editha Gonia sp. Leucophora obtusa Mordellistena nunnenmacheri Mordellistena sp. Lepidoptera, unknown moth sp. Rhamphomyia sp. Rhamphomyia sp. Toxomerus marginatus	San Nicolas Island Naval Reservation	G2; S2.1
Lotus argophyllum var. adsurgens (CA) (Santa Cruz Island silverhosackia, silver bird's trefoil, silver birds-foot trefoil)	Megachile rotunda Acanthoscelides fraterculus Acmaeodera angelica Acmaeodera feneysi Agrilus sierrae Anthidium collectum Anthidium collectum Anthidium collectum Anthidium utahense Anthophora urbana Apion sp. Ashmeadiella californica californica Augochlorella pomoniella Bombus caliginosus Bombus vosnesenskii Coccinella trifasciata juliana Diachus auratus Hippodamia convergens Hoplitis sambuci Leptochilus menkei Lopidea sp. Megachile gentilis Megaghile brevis onubrychia Megaghile brevis onubrychia	San Clemente Island Naval Reservation	G5T1; S1.1

	Mordella atrata albosuturalis Mordella hubbsi Omalus granti Osmia bruneri Osmia calla Osmia exigua Osmia exigua Osmia gabrielis Osmia juxta Osmia kincaidii Osmia kincaidii Osmia nemoris Osmia nemoris Osmia nigrifrons Osmia nigrifrons Osmia nigrifrons Osmia nigrifrons Osmia sp. Pachybrachys hybridus Pachybrachys signatifrons Paragus sp. Pegachile parallela facunda Phyllobaenus scaber Plebejus acmon Polites sabuleti Psenelus sp. Pyrgus communis Saxinis saucia Sphecodes sp. Stenodynerus blandus Synhalonia actuosa Trichodes ornatus Ashmeadiella timberlakei Anthidium formosum Anthidium mormonum Osmia dolerosa Osmia laeta Osmia malina Osmia nifoata Osmia regulina Osmia sanctae-rosae Osmia visenda Perdita trisignata		
Lotus nuttallianus (CA) (Nuttal's loutus, Nevada bird's-foot trefoil)	Megachile rotunda Acanthoscelides fraterculus Acmaeodera angelica Acmaeodera feneysi Agrilus sierrae Anthidium collectum Anthidium collectum Anthidium collectum Anthidium utahanse Anthophora urbana Apion sp. Ashmeadiella californica californica Augochlorella pomoniella Bombus caliginosus Bombus vosnesenskii Coccinella trifasciata juliana Diachus auratus Hippodamia convergens Hoplitis sambuci	Camp Pendleton Marine Corps Base, Coronado Naval Amphibious Base	G1; S1.1

	<i>Leptochilus menkei</i> <i>Lopidea sp.</i> <i>Megachile gentilis</i> <i>Megachile brevis onubrychia</i> <i>Megachile brevis onubrychia</i> <i>Mordella atrata albosuturalis</i> <i>Mordella hubbsi</i> <i>Omalus granti</i> <i>Osmia bruneri</i> <i>Osmia calla</i> <i>Osmia exigua</i> <i>Osmia exigua</i> <i>Osmia gabrielis</i> <i>Osmia juxta</i> <i>Osmia kincaidii</i> <i>Osmia kincaidii</i> <i>Osmia nemoris</i> <i>Osmia nemoris</i> <i>Osmia nigritrons</i> <i>Osmia nigritrons</i> <i>Osmia nigritrons</i> <i>Osmia nigritrons</i> <i>Osmia sp.</i> <i>Pachybrachys hybridus</i> <i>Pachybrachys signatifrons</i> <i>Paragus sp.</i> <i>Pegachile parallela facunda</i> <i>Phyllobaenus scaber</i> <i>Plebejus acmon</i> <i>Polites sabuleti</i> <i>Psenelus sp.</i> <i>Pyrgus cummunis</i> <i>Saxinis saucia</i> <i>Sphecodes sp.</i> <i>Stenodynerus blandus</i> <i>Synhalonia actuosa</i> <i>Trichodes ornatus</i>		
Lupinus guadalupensis (AZ, CA) (Guadalupe Island lupine)	<i>Anthidium emarginatum</i> <i>Anthidium mormonum</i> <i>Anthidium tenuiflorae</i> <i>Anthophora urbana</i> <i>Anthophura pacifica</i> <i>Apis mellifera</i> <i>Bgmbus bifarius nearcticus</i> <i>Bombus caliginosus</i> <i>Bombus centralis</i> <i>Bombus edwardsii</i> <i>Bombus flavifrons dimidiatus</i> <i>Bombus sylvicola</i> <i>Chelostomopsis rubifloris</i> <i>Eristalis hirtus</i> <i>Hylemya dexiata</i> <i>Megachile melanophaea calogaster</i> <i>Osmia bruneri</i> <i>Osmia cara</i> <i>Osmia densa</i> <i>Osmia juxta</i> <i>Osmia lignaria propinqua</i> <i>Osmia nifonta</i> <i>Osmia nigrobarbata</i>	San Clemente Island Naval Reservation	G2; S2.2

	Osmia subaustralis Synhalonia lunata		
Lyonothamnus floribundus ssp. <i>aspleniifolius</i> (CA) (Santa Cruz silverpuffs)	Bee	San Clemente Island Naval Reservation	G2T2; S2.2
Malacothamnus abbottii (CA) (Catalina ironwood, island ironwood)	Andrena auricuma Augochlorella pomoniella Lasioglossum mellipes Megachile brevis onubrychia Osmia bruneri Osmia calla Trichodes ornatus Cucurlionidae, unknown sp. Mordella atrata albosuturalis Mordella grandis Mordella hubbsi Eschatocrepis constrictus Closterocoris amoenus	Hunter-Liggett Military Reservation	G1; S1.1
Microseris decipiens (CA) (San Joaquin silverpuffs)	Andrena Diandrena	Fort Ord Military Reservation (Closed)	G2; S2.2
Mimulus norrisii (CA) (Kaweah monkeyflower)	Bombus americanorum Bombus consimilis	Lake Kaweah	G2; S2.3
Monardella crispa (CA) (wavyleaf dune mint, flax like monardella, flaxleaf monardella, narrow leaved monardella)	Anthophora urbana Ashmeadiella Augochlorella pomoniella Bombus sp. Bombus californicus Bombus caliginosus Bombus centralis Bombus flavifrons dimidiatus Bombus flavifrons dimidiatus Bombus sylvicola Bombylius lancifer lancifer Bombyllus cachinnans Cephus clavatus Chlosyne damoetas Ectemnius spiniferus Epicauta puncticollis Anna's hummingbird Calliope Hummingbird Rufus Hummingbird Hylaeus personatellus Lasiops medius Unidentified Moth species Osmia exigua Osmia kincaidii Osmia nemoris Osmia texana Plebejus acmon Polites sabuleti Psithyrus fernaldae Speyeria egleis Speyeria mormona Steniola sp. Tenthredo anomocera Trichodes ornatus Vanessa caryae Vanessa milberti Anthidium	Vandenberg Air Force Base	G2; S2.2

	Anthophora Calliopsis Chelostoma Dianthidium Nomadopsis Osmia		
Muilla clevelandii (CA) (California spineflower, San Diego golden star)	Adela flammeusella Toxomerus marginatus Stenodynerus cochisensis	El Centro Naval Air Facility, Miramar Naval Air Station	G2; S2.2
Myosurus minimus ssp. apus (CA) (tiny mousetail)	Chloralictus zephyrus	Camp Pendleton Marine Corps Base, Miramar Naval Air Station	G2T2Q; S2.2
Nesaea longipes (TX) (stalkflower)	Bees	Laughlin Air Force Base	G2G3; S2
Oenothera organensis (TX-NM) (Organ Mountain evening primrose)	Agapostemon viridulus Alcidamea simplex Anthedon compta Apis mellifera Bombus americanorum Centrinus scutellum album Ceratina dupla Chloralictus albipennis Chloralictus versatus Cistogaster pallasi Cyphopyga montivaga Deilephila lineata Diabrotica 12-punctata Epimelissodes obliqua Eristalis dimidiatus Eristalis latifrons Evylaeus pectoralis Halictus lerouxii Halictus parallelus Laertias philenor Limochares taumas Megachile brevis Megachile mendica Melissodes bimaculata Odontalictus ligatus Oxystoglossa confusa Paronomia nortonii Polites peckius Pontia protodice Sayapis pollicaris Seladonia fasciata Sphaerophoria cylindrica Syrphus americanus Tetralonia dilecta Trocillus colubris Tropidia mamillata	White Sands Missile Range*, Fort Bliss - McGregor Range*	G2; S2
Opuntia californica var. californica (CA) (snake cholla, brownspined pricklypear)	Agapostemon angelicus cockerell Agapostemon texanus californicus Ashmeadiella opuntiae cockerell Dialictus incompletus crawford Exomalopsis nitens cockerell Melissodes tessellata ILaberge	North Island Naval Air Station, San Diego Naval Training Center (Closed)	G3T2; S1.1
Opuntia munzii (CA) (Munz's prickly pear)	Agapostemon angelicus cockerell Agapostemon texanus californicus	Chocolate Mountain Naval Aerial Gunnery	G1; S1.2

	<i>Andrena enceliae</i> cockerell <i>Ashmeadiella opuntiae</i> cockerell <i>Dialictus incompletus</i> crawford <i>Exomalopsis nitens</i> cockerell <i>Lithurge apicalis</i> cresson <i>Melissodes tessellata</i> laberge	Range	
<i>Oryctes nevadensis</i> (NV) (shadscale spiny saltbush, Nevada oryctes)	Small bees	Hawthorne Army Ammunition Depot	G2G3; S2S3
<i>Peniocereus greggii</i> var. <i>greggii</i> (NM) (nightblooming cereus, queen of the night cactus)	<i>Manduca sexta</i> <i>Apis mellifera</i>	White Sands Missile Range*	G3G4T2; S1
<i>Penstemon ramosus</i> (NM) (lanceleaf beardtongue)	<i>Agapostemon viridulus</i> <i>Alcidamea simplex</i> <i>Anthemoessa abrupta</i> <i>Anthophora ursina</i> <i>Apis mellifera</i> <i>Atrytone zabulon</i> <i>Bombias auricomus</i> <i>Bombias separatus</i> <i>Bombomelecta thoracica</i> <i>Bombus americanorum</i> <i>Bombus consimilis</i> <i>Bombus impatiens</i> <i>Bombylius atriceps</i> <i>Centrosmia bucephala</i> <i>Ceratina dupla</i> <i>Ceratosmia lignaria</i> <i>Chloralictus pilosus</i> <i>Chloralictus pruinosus</i> <i>Chloralictus versatus</i> <i>Clisodon terminalis</i> <i>Curtisapis coriacea</i> <i>Cyphopyga montivaga</i> <i>Deilephila lineata</i> <i>Euphoeades troilus</i> <i>Eurymus philodice</i> <i>Heraclides cresphontes</i> <i>Holonomoda affabilis</i> <i>Laertias philenor</i> <i>Leionotus anormis</i> <i>Leionotus foraminatus</i> <i>Megachile brevis</i> <i>Mesogramma marginata</i> <i>Monilosmia canadensis</i> <i>Osmia atriventris</i> <i>Osmia collinsiae</i> <i>Osmia cordata</i> <i>Osmia distincta</i> <i>Osmia pumila</i> <i>Papilio asterias</i> <i>Tetralonia belfragei</i> <i>Tetralonia dilecta</i> <i>Tetralonia rosae</i> <i>Trichius piger</i> <i>Trochilus colubris</i> <i>Ancistrocerus</i> sp. 3 <i>Anthocopa abjecta alta</i> <i>Anthocopa elongata</i> <i>Anthophora urbana</i> <i>Bombus balteatus</i>	White Sands Missile Range*	G2G3Q; S3?

	<i>Bombus centralis</i> <i>Bombus flavifrons dimidiatus</i> <i>Bombus sylvicola</i> <i>Bombylius aurifer</i> <i>Bombylius lancifer lancifer</i> <i>Chlosyne damoetas</i> <i>Dialictus microlepoides</i> <i>Eupeodes volucris</i> <i>Evylaeus sp.</i> <i>Calliope Hummingbird</i> <i>Rufus Hummingbird</i> <i>Hylaeus ellipticus</i> <i>Lytta blaisdelli</i> <i>Unidentified Moth species</i> <i>Osmia longula</i> <i>Osmia nigrobarbata</i> <i>Osmia penstemonis</i> <i>Osmia subaustralis</i> <i>Thorybes mexicana nevada</i>		
Penstemon rubicundus (NV) (Wassuk Range beardtongue)	<i>Agapostemon viridulus</i> <i>Alcidamea simplex</i> <i>Anthemoessa abrupta</i> <i>Anthophora ursina</i> <i>Apis mellifera</i> <i>Atrytone zabulon</i> <i>Bombias auricomus</i> <i>Bombias separatus</i> <i>Bombomelecta thoracica</i> <i>Bombus americanorum</i> <i>Bombus consimilis</i> <i>Bombus impatiens</i> <i>Bombylius atriceps</i> <i>Centrosmia bucephala</i> <i>Ceratina dupla</i> <i>Ceratosmia lignaria</i> <i>Chloralictus pilosus</i> <i>Chloralictus pruinosus</i> <i>Chloralictus versatus</i> <i>Clisodon terminalis</i> <i>Curtisapis coriacea</i> <i>Cyphopyga montivaga</i> <i>Deilephila lineata</i> <i>Euphoeades troilus</i> <i>Eurymus philodice</i> <i>Heraclides cresphontes</i> <i>Holonomoda affabilis</i> <i>Laertias philenor</i> <i>Leionotus anomis</i> <i>Leionotus foraminatus</i> <i>Megachile brevis</i> <i>Mesogramma marginata</i> <i>Monilosmia canadensis</i> <i>Osmia atriventris</i> <i>Osmia collinsiae</i> <i>Osmia cordata</i> <i>Osmia distincta</i> <i>Osmia pumila</i> <i>Papilio asterias</i> <i>Tetralonia belfragei</i> <i>Tetralonia dilecta</i> <i>Tetralonia rosae</i>	Hawthorne Army Ammunition Depot	G2G3; S2S3

	<i>Trichius piger</i> <i>Trochilus colubris</i> <i>Ancistrocerus</i> sp. 2 <i>Anthocopa abjecta alta</i> <i>Anthocupa elongata</i> <i>Anthophora urbana</i> <i>Bombus balteatus</i> <i>Bombus centralis</i> <i>Bombus flavifrons dimidiatus</i> <i>Bombus sylvicola</i> <i>Bombylius aurifer</i> <i>Bombylius lancifer lancifer</i> <i>Chlosyne damoetas</i> <i>Dialictus microlepoides</i> <i>Eupeodes volucris</i> <i>Evylaeus</i> sp. <i>Calliope</i> Hummingbird <i>Rufus</i> Hummingbird <i>Hylaeus ellipticus</i> <i>Lyta blaisdelli</i> Unidentified Moth species <i>Osmia longula</i> <i>Osmia nigrobarbata</i> <i>Osmia penstemonis</i> <i>Osmia subaustralis</i> <i>Thorybes mexicana nevada</i>		
Perityle huecoensis (TX-NM) (Hueco rockdaisy)	small bees <i>Apis mellifera</i> small flies	Fort Bliss - McGregor Range*	G1; S1(TX)
Perityle staurophylla var. homoflora (NM) (New Mexico rockdaisy)	small bees <i>Apis mellifera</i> small flies	White Sands Missile Range*	G4T2; S2
Phacelia floribunda (CA) (cleleaf wild heliotrope, heliotrpe phacelias, notch leaved phacelias, southern island phacelia, San Clemente Island phacelia)	<i>Anthidium palliventre</i> <i>Bombus</i> sp. <i>Apis mellifera</i> <i>Acmaeodera idahoensis</i> <i>Andrena erecta</i> <i>Andrena medionitens</i> <i>Andrena</i> sp. <i>Anthidium clypeodentatum</i> <i>Anthidium collectum</i> <i>Anthidium emarginatum</i> <i>Anthidium tenuiflorae</i> <i>Anthophora urbana</i> <i>Anthrax irroratus irroratus</i> <i>Ashmeadiella</i> <i>Bombus californicus</i> <i>Bombus centralis</i> <i>Bombus flavifrons dimidiatus</i> <i>Dialictus microlepoides</i> <i>Epicauta puncticollis</i> <i>Evylaeus</i> sp. <i>Formica fusca</i> <i>Hoplitis albifrons argentifrons</i> <i>Hoplitis fulgida platyura</i> <i>Megachile melanophaea calogaster</i> <i>Megachile perihirta</i> <i>Metasyrphus lapponicus</i> <i>Osmia bruneri</i> <i>Osmia calla</i>	San Clemente Island Naval Reservation	G2; S1.1

	Panurginus sp. E Plebejus saepeolus Pogonomyia amnicola Pseudomasaris coquillettae Pseudomasaris edwardsii Pseudomasaris zonalis Tenthredo anomocera Vanessa milberti Xeromelecta californica		
Phacelia stellaris (CA) (star phacelia and Brand's phacelia)	Anthidium palliventre Bombus sp. Apis mellifera Acmaeodera idahoensis Andrena erecta Andrena medionitens Andrena sp. Anthidium clypeodentatum Anthidium collectum Anthidium emarginatum Anthidium tenuiflorae Anthophora urbana Anthrax irroratus irroratus Ashmeadiella Bombus californicus Bombus centralis Bombus flavifrons dimidiatus Dialictus microlepoides Epicauta puncticollis Evylaeus sp Formica fusca Hoplitis albifrons argentifrons Hoplitis fulgida platyura Megachile melanophaea calogaster Megachile perihirta Metasyrphus lapponicus Osmia bruneri Osmia calla Panurginus sp. E Plebejus saepeolus Pogonomyia amnicola Pseudomasaris coquillettae Pseudomasaris edwardsii Pseudomasaris zonalis Tenthredo anomocera Vanessa milberti Xeromelecta californica	Camp Pendleton Marine Corps Base	G1G2; S1.1
Pholisma sonorae (AZ) (sand food)	Flies Beetles Small butterflies	Barry M. Goldwater Air Force Range	G2; S1
Pogogyne clareana (CA) (Santa Lucia mint)	Bumble bee Sweat bee	Hunter-Liggett Military Reservation	G1; S1.2
Polygala rimulicola var. mescalerorum (NM) (mescalero milkwort)	Calliopsis andreniformis Melissodes nivea Systoechus vulgaris Triepeolus cressonii	White Sands Missile Range*	G3T1; S1
Porophyllum pygmaeum (NV)	Bees	Nellis Air Force Base	G2; S2

(dwarf poreleaf)	Flies Syrphidae		
Puccinellia parishii (CA) (bog alkaligrass, alkaligrass)	Wind pollinated	Edwards Air Force Base	G2; S1.1
Quercus dumosa (CA) (coast live oak, coastal sage scrub oak)	Andrena atypica Lasioglossum titusi		
Rudbeckia scabriifolia (TX) (roughleaf coneflower)	Acmaeodera pulchella Aenigmatomus longipalpus Agapostemon radiatus Agapostemon viridulus Allograpta obliqua Anthrax alternata Anthrax fulvohirta Anthrax halcyon Anthrax parvicornis Apinops atra Apis mellifera Archytas analis Archytas aterrima Argynnис cybele Argyramoeba oedipus Basilarchia archippus Batyle suturalis Bembix nubillipennis Bembix spinolae Bicyrtes ventralis Bombias auricomus Bombias scutellaris Bombias separatus Bombus americanorum Bombus impatiens Calliopsis andreniformis Calliopsis coloradensis Calocoris rapidus Centrias americanus Centrinus scutellum album Ceratina dupla Ceratosoma fasciata Charidryas nycteis Chauliognathus pennsylvanicus Chloralictus albipennis Chloralictus coreopsis Chloralictus pilosus Chloralictus pruinosis Chloralictus sparsus Chloralictus versatus Chloralictus zephyrus Chrysophanus thoe Cistogaster occidua Coelioxys octodentata Coelioxys alternata Coelioxys sayi Coenosia antica Colletes americanus Colletes compactus Colletes euplophi Conops brachyrrhynchus Curtisapis coriacea	Sam Rayburn Reservoir	G2G3; S2

	Cyaniris pseudargiolus Cyphocera fucata Cyphopyga montivaga Diabrotica 12-punctata Elis 5-cincta Elis interrupta Epeorus autumnalis Epeorus bifasciatus Epeorus interruptus Epicauta pennsylvanica Epigrimyia floridensis Epigrimyia geniculata Epigrimyia illinoensis Epimelissodes illinoensis Epimelissodes obliqua Eristalis aeneus Eristalis dimidiatus Eristalis latifrons Eristalis transversus Eurymus philodice Euschistus ictericus Eusiphona mira Everes comyntas Evylaeus pectoralis Exetastes suaveolens Exoprosopa decora Exoprosopa emarginata Exoprosopa fasciata Exoprosopa fascipennis Geron calvus Geron rufipes Halictus lerouxii Halictus parallelus Harmostes reflexulus Helophilus latifrons Hesperia montivaga Leionotus anomis Leionotus arvensis Leionotus molestus Lepidophora lepidocera Leskiomima secunda Leucostoma atra Leucostoma siphonina Limochores taumas Lygus pratensis Macrobasis unicolor Mallota cimbiciformis Megachile verbesinae Megachile brevis Megachile petulans Melissodes agilis Melissodes autumnalis Melissodes bimaculata Melissodes boltoniae Melissodes coloradensis Melissodes simillima Melissodes trinodis Melissodes vernoniana Mesogramma geminata Mesogramma marginata Mesogramma polita Mordella marginata		
--	--	--	--

	<i>Mordella scutellaris</i> <i>Neotrypetes truncatus</i> <i>Notoglossa americana</i> <i>Ocyptera argentea</i> <i>Ocyptera lata</i> <i>Ocyptera tenuis</i> <i>Odontalictus ligatus</i> <i>Odontalictus nigrirostris</i> <i>Oligotropus oligolege</i> <i>Oncomyia loraria</i> <i>Orthoneura nitida</i> <i>Oxystoglossa confusa</i> <i>Oxystoglossa pura</i> <i>Oxystoglossa similis</i> <i>Paragus tibialis</i> <i>Parempis clausa</i> <i>Peleteria robusta</i> <i>Phorantha humeralis</i> <i>Phorantha purpurascens</i> <i>Phthiria aldrichi</i> <i>Phthiria cincta</i> <i>Phthiria sulphurea</i> <i>Phyciodes tharos</i> <i>Pieris rapae</i> <i>Plusia simplex</i> <i>Polistes variatus</i> <i>Polites peckius</i> <i>Pontia protodice</i> <i>Priononyx atrata</i> <i>Priononyx thomae</i> <i>Proboscimyia siphonina</i> <i>Pseudopanurgus albifrons</i> <i>Pseudopanurgus asteris</i> <i>Pseudopanurgus compositarum</i> <i>Pseudopanurgus labrosiformis</i> <i>Pseudopanurgus rudbeckiae</i> <i>Pseudopanurgus rugosus</i> <i>Pseudopanurgus solidaginis</i> <i>Pseudopyrellia cornicina</i> <i>Psithyrus variabilis</i> <i>Pterandrena aliciae</i> <i>Pterandrena rudbeckiae</i> <i>Pterocheilus quinquefasciatus</i> <i>Ptilodexia abdominalis</i> <i>Sapromyza vulgaris</i> <i>Sayapis pugnata</i> <i>Sayapis sayi</i> <i>Scepsis fulvicollis</i> <i>Scolia bicincta</i> <i>Seladonia fasciata</i> <i>Senotainia trilineata</i> <i>Siphona geniculata</i> <i>Siphonella cinerea</i> <i>Siphoplagia anomala</i> <i>Spallanzania hesperidarum</i> <i>Sparnopolius fulvus</i> <i>Sphaerophoria cylindrica</i> <i>Sphex gracilis</i> <i>Sphex nigricans</i> <i>Sphex pictipennis</i> <i>Sphex vulgaris</i> <i>Spilomyia longicornis</i>		
--	---	--	--

	<i>Stelidium trypetinum</i> <i>Stictiella pictifrons</i> <i>Syritta pipiens</i> <i>Syrphus ribesii</i> <i>Systoechus vulgaris</i> <i>Systropus macer</i> <i>Thecla calanus</i> <i>Toxophora amphitea</i> <i>Trichophora ruficauda</i> <i>Triepeolus concolor</i> <i>Triepeolus cressonii</i> <i>Triepeolus donatus</i> <i>Triepeolus helianthi</i> <i>Triepeolus pectoralis</i> <i>Tropidia mamillata</i> <i>Typocerus sinuatus</i> <i>Uranotes melinus</i> <i>Vanessa huntera</i> <i>Volucella fasciata</i> <i>Zaodontomerus calcaratus</i> <i>Zodion fulvifrons</i> <i>Zodion obliquefasciatum</i>		
<i>Salvia greggii</i> (CA)	<i>Anthophora</i>	Chocolate Mountain Naval Aerial Gunnery Range	G2; S2.2
<i>Scrophularia atrata</i> (CA) (black-flowered figwort, bumble bee plant)	<i>Agapostemon viridulus</i> <i>Ancistrocerus campestris</i> <i>Anthemois centuncularis</i> <i>Apis mellifera</i> <i>Augochlora viridula</i> <i>Bombus consimilis</i> <i>Bombus impatiens</i> <i>Ceratina dupla</i> <i>Chloralictus sparsus</i> <i>Chloralictus versatus</i> <i>Chloralictus zephyrus</i> <i>Curtisapis coriacea</i> <i>Cyphopyga montivaga</i> <i>Eumenes fraternus</i> <i>Everes comyntas</i> <i>Halictus lerouxii</i> <i>Leionotus anomis</i> <i>Leionotus foraminatus</i> <i>Leionotus scrophulariae</i> <i>Leionotus ziziae</i> <i>Melissodes bimaculata</i> <i>Mesogramma marginata</i> <i>Mesogramma polita</i> <i>Monobia quadridens</i> <i>Oxystoglossa confusa</i> <i>Philanthus punctatus</i> <i>Polistes annularis</i> <i>Polistes pallipes</i> <i>Polistes rubiginosus</i> <i>Polistes variatus</i> <i>Scepsis fulvicollis</i> <i>Seladonia fasciata</i> <i>Siphona geniculata</i> <i>Sphex vulgaris</i> <i>Trochilus colubris</i>	Vandenberg Air Force Base	G2; S2.2

	Vespula cuneata Vespula germanica Vespula maculata Zethus spinipes		
Scrophularia laevis (TX-NM) (mountain figwort)	Agapostemon viridulus Ancistrocerus campestris Anthemois centuncularis Apis mellifera Augochlora viridula Bombus consimilis Bombus impatiens Ceratina dupla Chloralictus sparsus Chloralictus versatus Chloralictus zephyrus Curtisapis coriacea Cyphopyga montivaga Eumenes fraternus Everes comyntas Halictus lerouxii Leionotus anormis Leionotus foraminatus Leionotus scrophulariae Leionotus ziziae Melissodes bimaculata Mesogramma marginata Mesogramma polita Monobia quadridens Oxystoglossa confusa Philanthus punctatus Polistes annularis Polistes pallipes Polistes rubiginosus Polistes variatus Scepsis fulvicollis Seladonia fasciata Siphona geniculata Sphex vulgaris Trocillus colubris Vespula cuneata Vespula germanica Vespula maculata Zethus spinipes	Fort Bliss - McGregor Range*	G2; S2(NM)
Scrophularia villosa (CA) (Santa Catalina figwort)	Agapostemon viridulus Ancistrocerus campestris Anthemois centuncularis Apis mellifera Augochlora viridula Bombus consimilis Bombus impatiens Ceratina dupla Chloralictus sparsus Chloralictus versatus Chloralictus zephyrus Curtisapis coriacea Cyphopyga montivaga Eumenes fraternus Everes comyntas Halictus lerouxii Leionotus anormis	San Clemente Island Naval Reservation	G2; S2.2

	<i>Leionotus</i> <i>foraminatus</i> <i>Leionotus</i> <i>scrophulariae</i> <i>Leionotus</i> <i>ziziae</i> <i>Melissodes</i> <i>bimaculata</i> <i>Mesogramma</i> <i>marginata</i> <i>Mesogramma</i> <i>polita</i> <i>Monobia</i> <i>quadridens</i> <i>Oxystoglossa</i> <i>confusa</i> <i>Philanthus</i> <i>punctatus</i> <i>Polistes</i> <i>annularis</i> <i>Polistes</i> <i>pallipes</i> <i>Polistes</i> <i>rubiginosus</i> <i>Polistes</i> <i>variatus</i> <i>Scepsis</i> <i>fulvicollis</i> <i>Seladonia</i> <i>fasciata</i> <i>Siphona</i> <i>geniculata</i> <i>Sphex</i> <i>vulgaris</i> <i>Trochilus</i> <i>colubris</i> <i>Vespula</i> <i>cuneata</i> <i>Vespula</i> <i>germanica</i> <i>Vespula</i> <i>maculata</i> <i>Zethus</i> <i>spinipes</i>		
<i>Senecio multidentatus</i> var. <i>huachucanus</i> (AZ) (Huachuca Mountain ragwort)	<i>Centrias americanus</i> <i>Ceratina dupla</i> <i>Chloralictus pilosus</i> <i>Chloralictus pruinosis</i> <i>Cistogaster occidua</i> <i>Epigrimyia floridensis</i> <i>Eristalis latifrons</i> <i>Holonomada superba</i> <i>Leionotus clypeatus</i> <i>Mesogramma marginata</i> <i>Odontalictus ligatus</i> <i>Oxystoglossa confusa</i> <i>Oxystoglossa similis</i> <i>Peleteria robusta</i> <i>Sphaerophoria cylindrica</i> <i>Tetralonia dilecta</i> <i>Tropidia mamillata</i> <i>Zodion fulvifrons</i>	Fort Huachuca	G2G4T2; S2
<i>Sidalcea hickmanii</i> ssp. <i>hickmanii</i> (CA) (Parish's checker)	<i>Anthophora</i> <i>Cryptohalictoides</i> <i>Halictus</i> <i>Megachile</i> <i>Melissodes</i>	Hunter-Liggett Military Reservation	G3T2; S2.3
<i>Stephanomeria blairii</i> (AZ, CA) (Blair's stephanomeria)	<i>Ashmeadiella</i> <i>Melissodes</i> <i>Perdita</i>	San Clemente Island Naval Reservation	G2; S2.2
<i>Streptanthus albidus</i> ssp. <i>peramoenus</i> (CA, TX) (most beautiful jewelflower)	<i>Megachile comata</i> <i>Dialictus</i> sp. Bombyliid Syrphid <i>Megachile</i>	Hunter-Liggett Military Reservation	G2T2; S2.2
<i>Streptanthus bracteatus</i> (TX) (Austin's vanishing wildflower bracted jewelflower)	<i>Megachile comata</i> <i>Dialictus</i> sp. Bombyliid Syrphid <i>Megachile</i>	Camp Bullis, Camp Mabry	G2; S2
<i>Stylocline citroleum</i> (CA) (oil nestraw)	Strictly self-pollinated	Naval Petroleum Reserve Number One	G1; S1.1

Symphyotrichum latum (AZ, CA) (Suisun marsh aster)	Actia pilipennis Agapostemon radiatus Agapostemon splendens Agapostemon texanus Agapostemon viridulus Agathis vulgaris Allograpta obliqua Alophora aeneoventris Alophora pulvrea Alydus eurinus Alydus pilosulus Ammobia ichneumonea Ancistrocerus campestris Ancistrocerus capra Ancistrocerus catskillensis Ancistrocerus tigris Andrena nubecula Anoplius illinoensis Anosia plexippus Anthemois centuncularis Anthidium psoraleae Anthophora ursina Anthrax alternata Anthrax halcyon Anthrax hypomelas Apinops atra Apis mellifera Archytas analis Archytas aterrima Argyramoeba albofasciata Atalopedes huron Augochlora fervida Augochlora viridula Baccha clavata Baccha fuscipennis Basilarchia astyanax Belvosia bifasciata Belvosia unifasciata Bicyrtes ventralis Bombias auricomus Bombias scutellaris Bombias separatus Bombus americanorum Bombus consimilis Bombus impatiens Bombylius major Bracon longicauda Callidryas eubule Calliopsis andreniformis Calythea albicincta Celatoria diabroticae Ceratina dupla Cerceris astarte Cerceris bicornuta Cerceris clypeata Cerceris fulvipes Cerceris prominens Ceropales fraterna Chaetogaedia crebra Chaetopsis aenea Chalcis flavipes Charidryas nycteis	Concord Naval Weapons Station	G2; S2.2
---	--	-------------------------------	----------

	<i>Chauliognathus pennsylvanicus</i> <i>Chelonus sericeus</i> <i>Chilosia punctulata</i> <i>Chloralictus coreopsis</i> <i>Chloralictus foveolatus</i> <i>Chloralictus illinoensis</i> <i>Chloralictus obscurus</i> <i>Chloralictus pilosus</i> <i>Chloralictus pruinosus</i> <i>Chloralictus smilacinae</i> <i>Chloralictus sparsus</i> <i>Chloralictus tegularis</i> <i>Chloralictus versatus</i> <i>Chloralictus zephyrus</i> <i>Chrysophanus thoe</i> <i>Cistogaster occidua</i> <i>Clytiomyia flava</i> <i>Coelioxys 8-dentata</i> <i>Coelioxys rufitarsis</i> <i>Coelioxys sayi</i> <i>Coenosia 6-notata</i> <i>Coenosia antennalis</i> <i>Coenosia antica</i> <i>Colletes americanus</i> <i>Colletes armatus</i> <i>Colletes compactus</i> <i>Colletes euplohi</i> <i>Compsomyia macellaria</i> <i>Conops xanthopareus</i> <i>Curtisapis coriacea</i> <i>Curtisapis forbesii</i> <i>Curtisapis fuscipennis</i> <i>Cyaniris pseudargiolus</i> <i>Cyllene robiniae</i> <i>Cynomyia cadaverina</i> <i>Cyphocera fucata</i> <i>Diabrotica 12-punctata</i> <i>Diabrotica longicornis</i> <i>Diabrotica vittata</i> <i>Dialictus anomalus</i> <i>Dialonia antennariae</i> <i>Dilophus serotinus</i> <i>Distichona varia</i> <i>Drasteria erechtea</i> <i>Elis 5-cincta</i> <i>Elis interrupta</i> <i>Ennyomma globosa</i> <i>Epargyreus tityrus</i> <i>Epeorus autumnalis</i> <i>Epeorus bifasciatus</i> <i>Epeorus pusillus</i> <i>Epicauta pennsylvanica</i> <i>Epigrimyia floridensis</i> <i>Epimelissodes obliqua</i> <i>Episyron biguttatus</i> <i>Eristalis aeneus</i> <i>Eristalis bastardi</i> <i>Eristalis dimidiatus</i> <i>Eristalis flavipes</i> <i>Eristalis latifrons</i> <i>Eristalis tenax</i> <i>Eristalis transversus</i>		
--	--	--	--

	<i>Eucerceris zonatus</i> <i>Eumenes fraternus</i> <i>Euphoria sepulchralis</i> <i>Euphorocera claripennis</i> <i>Euptoieta claudia</i> <i>Eurema lisa</i> <i>Eurymus philodice</i> <i>Euthera tentatrix</i> <i>Everes comyntas</i> <i>Lasioglossum macoupinense</i> <i>Evylaeus arcuatus</i> <i>Evylaeus foxii</i> <i>Evylaeus pectoralis</i> <i>Exetastes obscurus</i> <i>Exoprosopa decora</i> <i>Exoprosopa fasciata</i> <i>Exoprosopa fascipennis</i> <i>Feltia subgothica</i> <i>Geranomyia canadensis</i> <i>Geron rufipes</i> <i>Gonochrysis perpulchra</i> <i>Graphomyia americana</i> <i>Gymnosoma fuliginosa</i> <i>Halictus lerouxii</i> <i>Halictus parallelus</i> <i>Harmostes reflexulus</i> <i>Helicobia 4-setosa</i> <i>Helicobia helicis</i> <i>Heliothis armiger</i> <i>Helophilus latifrons</i> <i>Helophilus similis</i> <i>Hesperia montivaga</i> <i>Heterosarus parvus</i> <i>Holonomomada placida</i> <i>Holonomomada vincta</i> <i>Hylemyia laevis</i> <i>Hylephila phylaeus</i> <i>Hypatus bachmanni</i> <i>Hypocrabro 10-maculatus</i> <i>Hypostena barbata</i> <i>Isodontia apicalis</i> <i>Junonia coenia</i> <i>Lampronota varia</i> <i>Larropsis distincta</i> <i>Leionotus anormis</i> <i>Leionotus arvensis</i> <i>Leionotus clypeatus</i> <i>Leionotus dorsalis</i> <i>Leionotus foraminatus</i> <i>Leionotus fulvipes</i> <i>Leionotus fundatus</i> <i>Leionotus histrionalis</i> <i>Leionotus scrophulariae</i> <i>Leskiomima prima</i> <i>Leucostoma atra</i> <i>Leucostoma neomexicana</i> <i>Leucostoma nigricornis</i> <i>Limnophora narona</i> <i>Limnochores taumas</i> <i>Linnaemyia compta</i> <i>Lophopompilus philadelphicus</i> <i>Lucilia caesar</i>		
--	---	--	--

	Lucilia sericata Lucilia sylvarum Lygaeus turcicus Lygus pratensis Machaeris stygia Macquartia pristis Megachile brevis Megachile generosa Megachile mendica Melissodes agilis Melissodes asteris Melissodes autumnalis Melissodes bimaculata Melissodes boltoniae Melissodes nivea Melissodes simillima Melissodes trinodis Mesogramma geminata Mesogramma marginata Metopia polycinctorius Milesia ornata Mimesa cressonii Musca domestica Myospila meditabunda Nathalis iole Neotrypetes productus Neotrypetes truncatus Notogonidea argentata Ocyptera lata Ocyptera tenuis Odontalictus ligatus Oncomyia loraria Orthoneura nitida Osmia atriventris Osmia collinsiae Osmia illinoensis Osmia pumila Oxystoglossa confusa Oxystoglossa pura Oxystoglossa similis Papilio asterias Paradidyma singularis Paragus bicolor Paragus tibialis Paralictus platyparius Parempis clausa Peleteria robusta Perdita 8-maculata Philanthus politus Philanthus punctatus Philanthus ventilabris Phorantha asteris Phorantha magna Phorantha pruinosa Phorantha purpurascens Phorbia acra Phorbia platura Phormia regina Phyciodes tharos Phyocephala texana Phyocephala tibialis Pieris rapae		
--	---	--	--

	Pipiza nigribarba Pipiza pulchella Planiceps feralis Platychirus quadratus Plusia simplex Polistes annularis Polistes pallipes Polistes rubiginosus Polistes variatus Polites peckius Pontia protodice Priononyx atrata Prosopis illinoensis Prosopis pygmaea Proteraner ranunculi Protothyreopus rufifemur Pseudopanurgus albifemur Pseudopanurgus asteris Pseudopanurgus compositarum Pseudopyrellia cornicina Psithyrus variabilis Pterallastes thoracicus Pterandrena asteris Pterandrena helianthi Pterandrena pulchella Pterandrena solidaginis Ptilodexia abdominalis Robertsonomyia palpalis Sarcophaga assidua Sarcophaga cimbicis Sarcophaga hunteri Sayapis sayi Scepsis fulvicollis Scolia bicincta Seladonia fasciata Senotainia rubriventris Senotainia trilineata Sericomyia chrysotoxoides Sinea diadema Siphona geniculata Siphoplagia anomala Siphoplagia flaccidirostris Solenius interruptus Spallanzania hesperidarum Sparnopolius fulvus Sphaerophoria cylindrica Sphecodium cressonii Sphex gracilis Sphex nigricans Sphex pictipennis Sphex procera Sphex vulgaris Spilomyia 4-fasciata Spilomyia longicornis Stelidium trypetinum Stizus unicinctus Stomoxys calcitrans Sturmia phycoides Stylogaster biannulata Symmorphus debilis Synothyreopus tumidus Syritta pipiens		
--	---	--	--

	<i>Syrphus americanus</i> <i>Syrphus arcuatus</i> <i>Syrphus ribesii</i> <i>Syrphus torvus</i> <i>Systoechus vulgaris</i> <i>Systropus macer</i> <i>Tachytes obscurus</i> <i>Tetralonia dilecta</i> <i>Tetralonia dubitata</i> <i>Tetralonia robertsonii</i> <i>Thanaos icelus</i> <i>Thanaos juvenalis</i> <i>Thanaos martialis</i> <i>Toxophora amphitea</i> <i>Trichophora ruficauda</i> <i>Trichopoda pennipes</i> <i>Triepeolus concolor</i> <i>Triepeolus cressonii</i> <i>Triepeolus donatus</i> <i>Triepeolus micropygius</i> <i>Triepeolus pectoralis</i> <i>Tropidia albistylum</i> <i>Tropidia mamillata</i> <i>Trypeta humilis</i> <i>Uranotes melinus</i> <i>Vanessa cardui</i> <i>Vanessa huntera</i> <i>Vespa cuneata</i> <i>Vespa germanica</i> <i>Vespa maculata</i> <i>Winthemia quadripustulata</i> <i>Xanthidia nicippe</i> <i>Xanthogramma emarginata</i> <i>Xanthomelana arcuata</i> <i>Xanthosarus latimanus</i> <i>Zaodontomerus calcaratus</i> <i>Zendalia zendaloides</i> <i>Zerene caesonia</i> <i>Zodion fulvifrons</i> <i>Zodion nanellum</i>		
<i>Thurovia triflora</i> (TX) (Threeflower Snakeweed, Triflora Rose, Threeflower Snakeweed)	bees flies	TS Barker Dam DZ	G1; S1.1
<i>Trifolium buckwestiorum</i> (CA) (Santa Cruz clover)	<i>Agapostemon radiatus</i> (3) <i>Agapostemon viridulus</i> (3) <i>Alcidamea simplex</i> (3) <i>Ancyloxypha numitor</i> (3) <i>Anosia plexippus</i> (3) <i>Anthemoessa abrupta</i> (3) <i>Anthemois centuncularis</i> (3) <i>Anthidium psoraleae</i> (3) <i>Anthophora ursina</i> (3) <i>Apis mellifera</i> (2,3) <i>Archytas analis</i> (3) <i>Argynnис cybele</i> (3) <i>Augochlora fervida</i> (3) <i>Augochlora viridula</i> (3) <i>Bombias auricomus</i> (3) <i>Bombias scutellaris</i> (3) <i>Bombias separatus</i> (3)	Fort Ord Military Reservation (Closed)	G1; S1.1

	<p><i>Bombus americanorum</i> (3)</p> <p><i>Bombus consimilis</i> (3)</p> <p><i>Bombus impatiens</i> (3)</p> <p><i>Bombus kirbyellus</i> (1)</p> <p><i>Bombus occidentales</i> (2)</p> <p><i>Bombus ridingsii</i> (3)</p> <p><i>Bombus silvícola</i> (1)</p> <p><i>Bombylius atriceps</i> (3)</p> <p><i>Callidryas eubule</i> (3)</p> <p><i>Calliopsis andreniformis</i> (3)</p> <p><i>Campsomeris confluenta</i> (3)</p> <p><i>Centrias americanus</i> (3)</p> <p><i>Ceratina dupla</i> (3)</p> <p><i>Charidryas nycteis</i> (3)</p> <p><i>Chloralictus pilosus</i> (3)</p> <p><i>Chloralictus versatus</i> (3)</p> <p><i>Chrysophanus thoe</i> (3)</p> <p><i>Coelioxys 8-dentata</i> (3)</p> <p><i>Coelioxys sayi</i> (3)</p> <p><i>Curtisapis coriacea</i> (3)</p> <p><i>Cyaniris pseudargiolus</i> (3)</p> <p><i>Diceratostmia conjuncta</i> (3)</p> <p><i>Epargyreus tyturus</i> (3)</p> <p><i>Epeorus bifasciatus</i> (3)</p> <p><i>Epeorus interruptus</i> (3)</p> <p><i>Euptoieta claudia</i> (3)</p> <p><i>Eurymus philodice</i> (3)</p> <p><i>Everes comyntas</i> (3)</p> <p><i>Exoprosopa fasciata</i> (3)</p> <p><i>Halictus lerouxii</i> (3)</p> <p><i>Halictus parallelus</i> (3)</p> <p><i>Hemaris axillaris</i> (3)</p> <p><i>Heraclides cresphontes</i> (3)</p> <p><i>Holonomoda affabilis</i> (3)</p> <p><i>Holonomoda superba</i> (3)</p> <p><i>Hoplitis cylindricus</i> (3)</p> <p><i>Iphiclidess ajax</i> (3)</p> <p><i>Iphiclidess ajax</i> (3)</p> <p><i>Laertias phileenor</i> (3)</p> <p><i>Limochores taumas</i> (3)</p> <p><i>Megachile brevis</i> (3)</p> <p><i>Megachile generosa</i> (3)</p> <p><i>Megachile mendica</i> (3)</p> <p><i>Megachile rotundata</i> (2)</p> <p><i>Melissodes bimaculata</i> (3)</p> <p><i>Microbembex monodonta</i> (3)</p> <p><i>Neotrypetes barbatus</i> (3)</p> <p><i>Odontalictus ligatus</i> (3)</p> <p><i>Opandrena cressonii</i> (3)</p> <p><i>Osmia atriventris</i> (3)</p> <p><i>Osmia collinsiae</i> (3)</p> <p><i>Osmia cordata</i> (3)</p> <p><i>Osmia distincta</i> (3)</p> <p><i>Osmia pumila</i> (3)</p> <p><i>Oxystoglossa confusa</i> (3)</p> <p><i>Oxystoglossa similis</i> (3)</p> <p><i>Papilio asterias</i> (3)</p> <p><i>Parempis clausa</i> (3)</p> <p><i>Pholisora catullus</i> (3)</p> <p><i>Physocephala texana</i> (3)</p> <p><i>Physocephala tibialis</i> (3)</p> <p><i>Pieris rapae</i> (3)</p>		
--	---	--	--

	<i>Plusia simplex</i> (3) <i>Polites peckius</i> (3) <i>Pontia protodice</i> (3) <i>Priononyx atrata</i> (3) <i>Psithyrus laboriosus</i> (3) <i>Psithyrus variabilis</i> (3) <i>Seladonia fasciata</i> (3) <i>Sphex nigricans</i> (3) <i>Sphex pictipennis</i> (3) <i>Sphex procera</i> (3) <i>Stylogaster biannulata</i> (3) <i>Systoechus vulgaris</i> (3) <i>Tetralonia dilecta</i> (3) <i>Tetralonia rosae</i> (3) <i>Thanaos juvenalis</i> (3) <i>Thipsogaster ater</i> (3) <i>Thorybes pylades</i> (3) <i>Tripeolus remigatus</i> (3) <i>Trochilus colubris</i> (3) <i>Vanessa atalanta</i> (3) <i>Vanessa cardui</i> (3) <i>Vanessa huntera</i> (3) <i>Xanthidia nicippe</i> (3) <i>Zodion fulvifrons</i> (3)		
Trifolium polyodon (CA) (Gray's clover, Santa Cruz clover, Pacific Grove clover)	<i>Agapostemon radiatus</i> (3) <i>Agapostemon viridulus</i> (3) <i>Alcidamea simplex</i> (3) <i>Ancyloxypha numitor</i> (3) <i>Anosia plexippus</i> (3) <i>Anthemoessa abrupta</i> (3) <i>Anthemois centuncularis</i> (3) <i>Anthidium psoraleae</i> (3) <i>Anthophora ursina</i> (3) <i>Apis mellifera</i> (2,3) <i>Archytas analis</i> (3) <i>Argynnис cybele</i> (3) <i>Augochlora fervida</i> (3) <i>Augochlora viridula</i> (3) <i>Bombias auricomus</i> (3) <i>Bombias scutellaris</i> (3) <i>Bombias separatus</i> (3) <i>Bombus americanorum</i> (3) <i>Bombus consimilis</i> (3) <i>Bombus impatiens</i> (3) <i>Bombus kirbyellus</i> (1) <i>Bombus occidentales</i> (2) <i>Bombus ridingsii</i> (3) <i>Bombus silvícola</i> (1) <i>Bombylius atriceps</i> (3) <i>Callidryas eubule</i> (3) <i>Calliopsis andreniformis</i> (3) <i>Campsomeris confluenta</i> (3) <i>Centrias americanus</i> (3) <i>Ceratina dupla</i> (3) <i>Charidryas nycteis</i> (3) <i>Chloralictus pilosus</i> (3) <i>Chloralictus versatus</i> (3) <i>Chrysophanus thoe</i> (3) <i>Coelioxys 8-dentata</i> (3) <i>Coelioxys sayi</i> (3) <i>Curtisapis coriacea</i> (3)	Fort Ord Military Reservation (Closed)	G1Q; S1.1

	<p><i>Cyaniris pseudargiolus</i> (3)</p> <p><i>Diceratosmia conjuncta</i> (3)</p> <p><i>Epargyreus tityrus</i> (3)</p> <p><i>Epeolus bifasciatus</i> (3)</p> <p><i>Epeolus interruptus</i> (3)</p> <p><i>Euptoieta claudia</i> (3)</p> <p><i>Eurymus philodice</i> (3)</p> <p><i>Everes comyntas</i> (3)</p> <p><i>Exoprosopa fasciata</i> (3)</p> <p><i>Halictus leroxii</i> (3)</p> <p><i>Halictus parallelus</i> (3)</p> <p><i>Hemaris axillaris</i> (3)</p> <p><i>Heraclides cresphontes</i> (3)</p> <p><i>Holonomada affabilis</i> (3)</p> <p><i>Holonomada superba</i> (3)</p> <p><i>Hoplitis cylindricus</i> (3)</p> <p><i>Iphiclides ajax</i> (3)</p> <p><i>Iphiclides ajax</i> (3)</p> <p><i>Laertias phileenor</i> (3)</p> <p><i>Limochores taumas</i> (3)</p> <p><i>Megachile brevis</i> (3)</p> <p><i>Megachile generosa</i> (3)</p> <p><i>Megachile mendica</i> (3)</p> <p><i>Megachile rotundata</i> (2)</p> <p><i>Melissodes bimaculata</i> (3)</p> <p><i>Microbembex monodonta</i> (3)</p> <p><i>Neotrypetes barbatus</i> (3)</p> <p><i>Odontalictus ligatus</i> (3)</p> <p><i>Opandrena cressonii</i> (3)</p> <p><i>Osmia atriventris</i> (3)</p> <p><i>Osmia collinsiae</i> (3)</p> <p><i>Osmia cordata</i> (3)</p> <p><i>Osmia distincta</i> (3)</p> <p><i>Osmia pumila</i> (3)</p> <p><i>Oxystoglossa confusa</i> (3)</p> <p><i>Oxystoglossa similis</i> (3)</p> <p><i>Papilio asterias</i> (3)</p> <p><i>Parempis clausa</i> (3)</p> <p><i>Pholisora catullus</i> (3)</p> <p><i>Physocephala texana</i> (3)</p> <p><i>Physocephala tibialis</i> (3)</p> <p><i>Pieris rapae</i> (3)</p> <p><i>Plusia simplex</i> (3)</p> <p><i>Polites peckius</i> (3)</p> <p><i>Pontia protodice</i> (3)</p> <p><i>Priononyx atrata</i> (3)</p> <p><i>Psithyrus laboriosus</i> (3)</p> <p><i>Psithyrus variabilis</i> (3)</p> <p><i>Seladonia fasciata</i> (3)</p> <p><i>Sphex nigricans</i> (3)</p> <p><i>Sphex pictipennis</i> (3)</p> <p><i>Sphex procera</i> (3)</p> <p><i>Stylogaster biannulata</i> (3)</p> <p><i>Systoechus vulgaris</i> (3)</p> <p><i>Tetralonia dilecta</i> (3)</p> <p><i>Tetralonia rosae</i> (3)</p> <p><i>Thanaos juvenalis</i> (3)</p> <p><i>Thlipsogaster ater</i> (3)</p> <p><i>Thorybes pylades</i> (3)</p> <p><i>Triepeolus remigatus</i> (3)</p> <p><i>Trochilus colubris</i> (3)</p> <p><i>Vanessa atalanta</i> (3)</p>		
--	---	--	--

	Vanessa cardui (3) Vanessa huntera (3) Xanthidia nicippe (3) Zodion fulvifrons (3)		
Triteleia clementina (CA) (Santa Island triteleia)	Bombus griseocollis vosnesenskii Eucera cordleyi Eucera virgata Halictus farinosus Osmia granulose (Swallowtail)	San Clemente Island Naval Reservation	G1; S1.2
Vauquelinia californica ssp. Sonorensis (AZ) (Arizona rosewood, desert rose)	Apis mellifera Xylocopa californica	Barry M. Goldwater Air Force Range	G4T1; S1

Notes on abbreviations and names in the table:

- The abbreviation **sp.** following the Genus name indicates a pollinator visitor that could not be identified to the species level.
- The abbreviation **spp.** following the Genus name indicates that there are multiple pollinator species within a Genus that could not be identified to the species level.
- Species abbreviations followed by letters (e.g., **sp. A**) or numbers (e.g., **sp. 1**) indicate identification to *morphospecies* – although the species is unknown, there are unique and distinct identifiable characteristics that have been noted.
- Some species have a number as part of their scientific name (e.g., *Elis 5-cincta*). This represents an older naming convention that is no longer used by modern taxonomists.